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TRAVELS AND SETTLEMENTS
OF EARLY MAN



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TRAVELS AND SETTLEMENTS OF EARLY MAN

A STUDY OF THE
ORIGINS OF HUMAN PROGRESS

by

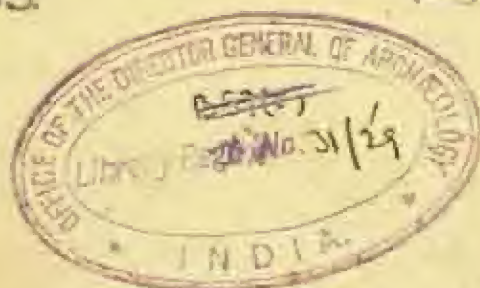
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CHAPTER I

INTRODUCTION

I

THE French have a popular use of the word *histoire* in which it signifies a narrative that is untrue. This is a good illustration of the extent to which a term may side-slip from the middle of its meaning. For history is not properly a narrative and the task of the historian begins with the exclusion of material which is unauthentic. Pressed home to its ultimate derivation the Greek *historia* stands for the judgment of a man who is wise, because he has seen. Herodotus and Aristotle while preserving this essential meaning elaborated its application, the former by defining the character of the material to be visualized, the latter by expanding the form of the judgment. For Herodotus the data of history consisted of facts within the human reference. Aristotle, when he entitled histories those researches which he pursued in biology and psychology in order to ascertain the nature of living things and of the soul, established the canon that history must proceed beyond the collection and verification of facts to their interpretation by means of a coherent hypothesis.

The historical methods both of Herodotus and of Aristotle reflected the Ionian philosophy, which had emerged in the sixth century B.C. as a reaction to renewed contact with Eastern learning. The astronomers of Chaldaea had invented the zodiac and had divided the disc of the moon into 240 parts, thus determining the portion of its surface

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to be illuminated on each day from new to full moon ; the sun worship of the Egyptians was associated with utilitarian applications of geometrical science. Thales the founder of the Ionian school was, according to Herodotus, by birth a Phoenician. It was perhaps for that reason natural that he should have assumed that the universe was ultimately composed of water and that he should have so far mistaken the temper of the Asiatic Greeks as to recommend them to unite into a single nation. His successful prediction of a solar eclipse suggests that he was acquainted with Egyptian mathematics. The outlook of his successor Anaximander was not less practical. He is credited with the invention of the sun-dial and with having been the first Greek cartographer ; his assertion that man was like another thing in the beginning, namely, a fish, revived an ancient Babylonian myth. Otherwise Anaximander led the way in directing Ionian philosophy towards a mechanical interpretation of the universe. His conception of the Infinite or Boundless as the first element of all things indicates a field of enquiry as yet lacking in definition ; his assertion that within this field the origin of life is to be sought in the non-living is an approach towards philosophic determinism. The first phase of the Ionian philosophy, having thus provided working conceptions of time and place, was brought to an end by the imminence of the Persian peril, which became a preoccupation of practical minds and affected philosophers with a sense of universal instability. All around was change, everything was continually becoming something else, all was in motion like streams. Towards the close of the sixth century the empire of Darius, advancing westwards with an orderly programme of territorial conquest and of local administration, suggested a solution for this uncertainty. The Persian religion based on the idea of conflict between the personified principles of creation and destruction supplied a possible interpretation of the observed phenomena of change, and the Ionian school finally attained to the conception of an integral universe

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informed by a single purpose and continually recreated by the interplay of processes of accretion and disintegration, whereby nothing was lost.

This monistic formula had the defect of an imperfect recognition of the opposition between organic and inorganic existence. The idea of a single directive purpose, tenable so long as this distinction remained unexplored, demanded reconsideration so soon as it became apparent that organic existence was purposive in a sense that inorganic existence was not. Not only were the processes of accretion and disintegration greatly complicated in the case of living things by the phenomena of birth, growth, reproduction, and death, but throughout these changes life remained the constant assertion of an individual purpose, which it was the specific function of the organism to fulfil. In man this self-determination was of a singularly independent character. It attained to autonomy in a great number of independent societies, differing the one from the other in forms of government, ceremonial and moral codes. The accepted opinion within the societies most hospitable to Ionian instruction was that their institutions were derived from an inspired lawgiver and thus rested on divine sanction. On this opinion Ionian teachers temporized, constructing the political theory that morals were fixed by law, law by authority, authority by revelation. But it became obvious that this construction by no means covered the facts. On the one hand it was patent that in proportion as societies excelled in affluence, culture, and autonomy, their progress had been spontaneous; on the other hand it was idle to suppose that the elevation of a tyrant, whether by conquest or by revolution, was other than an assertion of individual initiative. Unable to compose these oppositions the Ionian philosophy went bankrupt with the contrary declarations that man is the measure of all things and that justice is the will of the stronger.

It was natural that Herodotus, born in the seclusion of the Carian highlands when the Ionian monism was still

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solvent, should address himself to the task of describing the secular struggle between East and West, that had culminated in the defeat of the Persians in the battles of Plataea and Mycale, with unshaken belief in a single directive purpose and with the intention of respecting it throughout its manifestations. He pursued his investigation through travel, conversation with competent witnesses and the consultation of written records. Of the information thus acquired he was prepared to admit to his argument only that which he had himself seen, or which was supported by reliable evidence and accorded with his own experience. Other material, which he used by way of anecdote or to indicate the divergence of opinion, he relegated to the category of hearsay as unreliable though entertaining or curious. He held that it was within common knowledge that peoples were widely separated in beliefs and customs and remarked that none but a madman would make sport of foreign usages. Herodotus was well named by Cicero "the father of history." He stated a great theme, which the vigour of his narrative sustained and his skill as a raconteur and epigrammatist enlivened. He was concrete in the presentation of his facts, generous in the illustration of their background. He developed the historical orders of time and place, but was far from supposing that these of themselves sufficed for purposes of explanation which, as he recognized, demands the discovery of a causal connection between facts. When, however, he attempted to advance his research to the final stage of interpretation Herodotus was confronted with the difficulty that, while his data were facts standing referred to human experience, the terms of that reference remained in his day unexplored either by biography, which depicts an individual life as a sequence of characteristic reactions to circumstance, or by psychology, which seeks to explain human behaviour in terms of mental process. Incapable of advance along such lines of progressive analysis Herodotus fell back on social determinism, thereby committing himself to the explanation of political

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divergence by means of dissimilar revelations vouchsafed to inspired lawgivers, a conclusion in no way corroborative of the conception of a single directive purpose, and, as he himself feared, possibly displeasing to the gods.

Aristotle resumed the work of the Ionian school. He perceived that there was nothing to add to the conception of an integral universe, and was content to combine through the recognition of four material elements the various assumptions of his predecessors as to the substance from which it had come into being. He also adopted the opinions that the living had origin in the inanimate and that the finally directive purpose is a creative intelligence, which is divine and enters somehow, though imperfectly, into man. He remained close to the mechanical bias of the Ionians when he described time and place as real existences, and time in particular as a vessel having contents. Within these postulates, of which his treatment was summary, he concentrated on the plotting of that part of the field which the Ionian philosophy had tended to neglect. He devoted himself to the classification of the phenomena of animate existence and to the perfection of an analytic method of exposition. The material investigated by Aristotle was concrete, and he was hostile to the attempt to represent it by abstraction. He repudiated the Platonic conception that the forms of existence were alone real and the tendency to reduce forms quantitatively to mathematical formulæ. To Aristotle a form was solely and necessarily true of each individual existence that it served to classify. It was characteristic of the existences classified by Aristotle that they were self-determined, having in virtue of their capacities for incorporation, growth, and reproduction, the power of maintaining life. He devoted twelve years to the study of the marine fauna of the Ionian coast and compiled no less than 158 analyses of the institutions of contemporary Greek cities. Aristotle was thus both a biologist and a historian. The most coherent hypothesis that he left to subsequent historians interpreted purpose as the process of

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growth. For all stages of growth from origin to fulfilment he employed a single comprehensive term of which the English equivalent is nature.

Bede's Ecclesiastical History of the English Nation embraces the period extending between the first Roman invasion of 54 B.C. and the year A.D. 731. This is in his Preface clearly divided into two unequal parts by the date A.D. 596 when, through the mission of Augustine, "the English nation received the faith of Christ." The earlier part occupies little more than one tenth of the whole work. It consists of a compilation from the writings of Bede's predecessors, and serves as a legendary background that admits of the same explanation as the history. Bede's own investigation is confined to the second part comprising the events of one hundred and thirty-four years, of which fifty-eight fell within his own lifetime. Of these strictly contemporary years his treatment is so slight as to convey the impression that he regarded current events as unamenable to historical treatment, either because their immediacy limited perspective, or because direct appeal to contemporary common-sense furnished an alternative superior to historical analysis. For history proper the sources were for Bede either documentary, or traditional or occasional. He placed under contribution papal archives preserved in Rome and English memoranda of the form of annals and chronicles; he obtained much information from selected correspondents and from conversations with eyewitnesses and with men whose eminence rendered their testimony credible. Moreover, "as the true rule of history requires," he "laboured sincerely to commit to writing such things as I could gather from common report." Bede concluded his history with a chapter on the "present state of the English nation." He remarked that the "disposition of the times" was "peaceable and calm." The Picts were rejoicing "in being united in peace and truth with the whole Catholic Church." The Irish were friendly; the Britons, though opposed both to the English and to the orthodox Church,

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were in no way formidable. There was in Northumbria a strong inclination on the part of the laity, both noble and simple, to forsake martial discipline for the monastic life. "What will be the end hereof, the next age will show. This is for the present the state of all Britain; in the year since the coming of the English into Britain about 285, but in the 731st year of the incarnation of our Lord, in whose reign may the earth ever rejoice; may Britain exult in the profession of his faith; and may many islands be glad, and sing praises in honour of his holiness!"

To Bede, therefore, the present suggested a hopeful outlook towards the unwritten future. To instruct posterity in the sequence of situations which had led to this general welfare appeared to him to offer the best security for its permanence and diffusion. As to the motive power, which had thus given unity to the peoples assembled in Britain, Bede had himself no doubt. Born in the year of the Council of Hertford, "the first collective act of the English race," educated in the monastery of St. Peter and St. Paul at Jarrow, where, as he remarks, he spent all the remaining time of his life, he could trace the present peace and order to no other cause than to the benevolent will of God acting through His chosen ministers of the Catholic Church. But for them the English nation would have had no existence. As it existed, it had no history which was not ecclesiastical. The aim of his investigation was thus simply to set forth in kind and in order the operations of divine purpose, which had in his own day culminated in general peace and goodwill. To the ripe scholarship and candid judgment of Bede this exposition was attended with considerable difficulties. In the first place it was obvious that the organized authority of the Catholic Church, which perpetuated in Rome the memory of St. Peter, the Prince of Apostles, had not been the sole channel through which the divine purpose had operated. There was a collateral and more primitive tradition of the Church distinguished by autonomous Christian communities, an accommodating discipline and

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an extraordinary efficiency in missionary enterprise. For this tradition St. Paul, the Apostle to the Gentiles, stood as the example and patron. Thirdly, there were miraculous and unorganized operations of divine power manifested through the persons of holy men and women, and even through contact with their bodies after death. Miracles in the time of Bede carried conviction to simple minds and stimulated faith. Clearly, therefore, the fulfilment of divine purpose was by no means dependent solely on apostolic tradition. Far from evading this difficulty Bede, having subjected it to consideration, found cause to rely largely for purposes of exposition upon what were for him credible instances of the direct and miraculous intervention of divine power. It was mainly for such instances that he drew upon earlier sources for that part of his work which is antecedent to the mission of Augustine ; he abundantly utilized material of the same character in that part of his work in which he summarized contemporary experience. As to the traditions of St. Peter and St. Paul, he found these to have been neither coincident in time or place nor identical in function. In particular there was the discrepancy that while in the past organization might be seen following in the wake of missionary effort, that order was in the present reversed, so that missionary endeavour appeared to be no longer the antecedent but the consequent of organization. Finally, whilst candour required a true account of divine revelation, equally sacred and miraculous whether through or without apostolic mediation, an imperfect exposition threatened to disturb the present harmony. Of the three chief parties to the auspicious union of Christ's Church in Britain the English laity, the Roman clergy, and the northern Picts, the first were representative of direct revelation, the second of orthodox, the third of heterodox tradition. It fell to Bede, himself of the second party, and therefore liable to the suspicion of bias, to draw the conclusion that as in the past missionary enterprise had multiplied revelation, so in the present the Catholic Church had incorporated all

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manifestations of divine benevolence. It was, therefore, Bede's intention to allow the facts to speak for themselves.

Immediately after the Preface in which Bede distinguishes compilation from history and supplies a critical account of his sources for the latter, he proceeds to a topographical survey of Britain and Ireland. His history ends with a chronological recapitulation, on which he remarks: "I have thought fit to sum up those things, which have been related more at large according to the distinction of the times, for the better preserving them in memory." He thus gives prominence to the orders of place and time, and to the logical division of historical situations. The central thread of his exposition is contained in his second, third, and fourth books which deal with the mission of Augustine from Rome, and the work of his official successors; with the missionary labours of Aidan, Cedd, Chad, and Wilfred, accepted but not inspired by the Roman Church; and with the achievements of Theodore, appointed Archbishop in order to establish religious orthodoxy throughout the English Church. This sequence is sustained by the recurrent theme of miracles effected through these men and through their converts.

On book four Bede concentrated all his powers of description, narrative, and exposition. He expanded the situation through a series of accounts of missionary enterprise amongst various peoples, that cause Mercians, Picts, East Saxons, South Saxons, and Northumbrians to pass before the mind. Miracles are recorded; alternations of monastic, diocesan, and evangelistic activities in the lives of eminent churchmen serve to attest the versatility of the servants of the Catholic Church. This descriptive material is constructed round the life and work of Theodore of Tarsus, "a man well instructed in worldly and divine literature, as also in Greek and Latin, of known probity of life and venerable for age, being sixty-six years old." It is not surprising that Bede the scholar mass priest of Jarrow should recognize a signal manifestation of divine guidance in the selection of a native of St. Paul's own birthplace in Cilicia to establish in England

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the discipline, unity and learning of the Church founded by St. Peter at Rome. The personality and achievements of Theodore dominate book four. His qualifications and appointment ; his early visitations throughout the island ; how in his sixth year, at the Council of Hertford, he secured the submission of the English clergy to Catholic discipline, and in his thirteenth, at the Council of Heathfield, their acceptance of Catholic orthodoxy ; how he was joined by John ; how in his fifteenth year he made peace between the Kings of Mercia and Northumberland. Bede's historical method is objective. He collected, verified and arranged his facts. He saw that they cohered in situations which he described, that the situations were successive and not stationary, that through the coherence and succession of facts persisted uniformities. He thus employed three distinct orders of presentation. The first order is descriptive : it postulates a coherence of facts, which are either contemporaneous or closely consequent within a total situation ; it is through the descriptive order that situations are expanded by the exercise of a mental activity, which Tennyson has described as " this way and that dividing the swift mind." The second order is narrative : it postulates a succession of facts which are thus arranged in time ; it is through the narrative order that the sequence and development of situations are established ; without these the recognition of persistence would be lacking. The third order is expository : it postulates the existence of uniform principles which are constant though of varied application ; it is through the expository order that causal connections are established ; without it history would cease to be explanatory, description would subside into survey and narrative into chronicle. Historical method has resort to these orders of presentation according as at one time spatial extension, at another time chronological sequence, at another uniformities inherent in facts demand elucidation.

A method of investigation must, however, proceed in accordance with the character of its data. These in the

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case of history are fixed by the reference to human experience. For this reason historical investigation stands apart from investigations limited to the material universe. Natural science proceeds by the exclusion of individual insecurities of observation and inference, correcting for the personal equation. History, on the contrary, having variety of experience as its province, depends finally on the subjective controls of sympathy and insight. These efficiencies are by no means absent from the work of Bede. His book is an important source for the student of religious experience : he profited by the advance made by his predecessors in biography, and employed with effect a biographical treatment ; his argument was inspired and checked by his conscious reference to the actualities of his own life. These are solid grounds for esteeming Bede highly as an historian. On the other hand, historical explanation must remain within the human reference and in co-extension with its scope. Monastic seclusion and the character of his theme combined to limit Bede's horizon. His facts were to Bede historical data because they referred not to human experience as a whole, but to that part of it which for him stood highest because it entailed consciousness of super-human direction. In thus attempting to explain the less by the greater Bede made a concession to the miraculous which is scientifically impossible.

Explanation on another plan is thus described by Browning :

"Well, sir, the old way's altered somewhat since,
And the world wears another aspect now :
Somebody turns our spy glass round, or else
Puts a new lens in it ; grass, worm, fly, grow big :
We find big things are made of little things,
And little things go lessening till at last
Comes God behind them. Talk of mountains now ?
We talk of mould that heaps the mountain, mites
That throng the mould, and God that makes the mites."

In other words, it is possible to proceed towards philosophic simplification by subjecting the data under investigation

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to an analysis of increasing penetration. So often as authenticated facts fail to fit with a current hypothesis there arises the necessity of renewing the search for origins in order that facts and their inter-relations may be studied in their most simple terms. From such fundamental enquiries we may hope to attain to a reconstruction of knowledge surpassing the arbitrary limitations of isolated sciences and to achieve an exposition in more complete and accurate correspondence with the character of our material.

The three primary aspects of human experience are those of consciousness, continuity and individuality. To the plain man apart from these assumptions his own life and the lives of others become void. Let him attempt to suppose himself unconscious and he will be without assurance that he exists ; let him relinquish the idea of continuity and he becomes an inexplicable creature of the moment, incapable alike of retracing his experience in memory or of entertaining projects for the future ; let him negate the idea of individuality, and his thoughts, his feelings, and his actions cease to be his own, nor can he attribute them to any other ; let him deny these aspects to the experience of other men and he destroys any reasonable ground on which he may meet them either in antagonism or in co-operation. But these considerations by no means comprise all that the human reference involves. Consciousness is controlled by antecedent experience which makes for automatic response to familiar impressions. Thereby to an appreciable, but not to a total, extent thought, feeling and conduct are determined by the past. The apparatus of registration is subject to rhythmic vacillations of efficiency, whereby continuity is broken up into a succession of situations. Individuality is conditioned by temperament, a general disposition that is possibly regulated by the action of the ductless glands situated in various parts of the body, on which they act both physically and mentally. These glands form a coherent system of which the derangement is recognized to lead to inequality of growth and mental instability.

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The peculiar contribution of will to human experience is that of creating higher levels of consciousness, continuity and individuality, which raise these above the cumulative and periodic orders. By the assertion of his will, a man may within a situation of experience select those impressions to which he will direct his attention, and thereby secure for them preferential registration, substituting for the cumulative order an order of his own, in which experience is graded in a progressive series of stages towards the fulfilment of an envisaged end. He may maintain this voluntary attention in prolonged resistance to fatigue, utilizing it for the subdivision, expansion or connection of situations and so rising superior to the periodic order in a logical independence from the fortuities of time and place. "There is," says Kant, "nothing good save a good will." But to this conclusion the historian, concerned to interpret his material in its entirety, may demur. Is not the periodicity of fatigue, which finally imposes upon the will, as upon the emotions and perceptions, the necessity of rest also good, for rest is restorative? Is not the cumulative order good also, since it secures the effective registration of the impressions, which the volition by its acts of attention selects? But for these controls might not volitional energy do violence to right thinking, good conduct, and sound health, much as a fully trained athlete surpasses an untrained man in the capacity to do himself an injury by over-exertion? Human nature is a constitution which may be viewed from various aspects, but from none finally to the exclusion of the remainder. The periodicity of fatigue is an inevitable reminder that this constitution is not merely mental but also physical, nor is it any detraction from the sovereignty of the directive will that we should take into account that which it directs. For the evaluation of human nature we thus require some term that will stand for a constitutional balance between function and structure. To this organic unity in man we may apply the term human purpose.

Of the three primary aspects of experience, consciousness,

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continuity and individuality, that which is the least comfortable object of reflection is the last. For the supposition that his experience is unlike those of others makes a man uneasy. He receives the impressions of isolation and of unreality. A human life physically unrelated to other lives is inconceivable and a human experience unaffected by other experiences, immediate or remote, would be so abnormal as to stand in Aristotle's opinion entirely beyond the human scale, being in his trenchant expression that either of a beast or of a god. Thus individuality, though an inevitable condition of all human experience, is of itself rather actual than real. Common sense, having demanded its recognition, proceeds to demand further that it shall be so expanded as to remain coextensive with any expansion that volition may effect in consciousness or continuity. As it expands individuality enters into relation with other human existences and thus ceases to be isolated. It is convenient to have a term which will distinguish individuality in this aspect of potential realization. In common speech we may hear a man described as having individuality or personality, and accept the two descriptions as practically synonymous. We infer that the man is one who, because he is consistent in behaviour, may be credited with a certain mental balance and a certain attitude towards his fellows. The distinction which we should be inclined to draw is that a man of personality is likely to be progressive both in experience and in social relations, but that a man of individuality may well be fixed in opinion and unfacile in intercourse. Assuming this distinction to be just we may regard the terms as within certain limits of equal connotation, but reserve the term personality for the expansion of the individual experience in a direction appropriate to human nature and therefore conducive to an extension of common purpose. We must be prepared to concede that an infant is at birth individual, for he is then sentient and capable of registering impressions, and to recognize that he will continue to be individual so long as he lives. His personality is at

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birth latent, but cannot fail to grow, until he has attained to the full possession of his bodily and mental capacities. From that point it may continue to progress even as religion teaches, surviving individuality and receiving its full expansion after death, or its progress may be so arrested that a man's vision is limited to the hope of fulfilment in the persons of his children.

2

The individual experience is registered in a pattern, in part determined by antecedent impressions, in part ordered by the selective activity of the will. It is thus possible to regard any situation of experience as preparatory to a subsequent situation, and to distinguish as of superior importance situations that contribute towards a full and coherent apprehension of others, which follow them. It was clearly Bede's desire to create such a sequence for his countrymen, for he was at pains to make their antecedent experience explicit and unified, in order that they might have a yet more effective experience in the future. We should call both Bede's intention and the situation which he hoped to establish educative, and should thereby be distinguishing their preparatory value. Education may be defined as human experience regarded dynamically, and the aim of education as the promotion of human nature by the conversion of individuality into personality. These definitions include necessarily neither the conception of an educator, nor any limitation of the age of the person who may become educated. It is, indeed, common sense to reckon a person educated in proportion to his unaided capacity for apprehending the significance of a situation, and his education complete only when there remain no further situations for his exploration. The conception that the closing years of life are pre-eminently those in which a ripe experience should be supplemented by philosophic speculation is common ground in the educational theories of Plato and

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Aristotle. The educational theories of the Buddhist, of the Catholic Church up to the end of the fifteenth century and again of the English Puritans of the middle of the seventeenth century, were variously developed from the conception that the whole of life is but a preparation for an extended existence after death. Education may thus be a process conterminous with life ; but the greater and more important part of education belongs to that period of life which follows the full acquisition of mental and bodily development. Until the will and intelligence are fully capable of the co-ordinations necessary for the exploration of a situation, and bodily maturity such as to admit of full reciprocity in relations with others, the individual is occupied not so much in learning as in learning how to learn.

As the analytic method applied to explain the facts of the universe has distinguished first organic from inorganic existence, next human from other organic existences, so it is necessary that human nature should itself be approached piecemeal, though in order to a final synthesis. Man is removed supremely from all other creatures by mental abilities, which render his experience intelligent and purposive in a degree that theirs is not ; his physical endowment is by no means so remote from theirs and is indeed inferior in detail, though not in total economy, to that of many other animals. In all ages and from many angles of approach, man, through the medium of his thought, whereby alone he can assess values, has testified to the superiority of soul over body. The body is the servant, the tenement, the medium of expression of the soul : the body is vile, to be kept under, it dies, the spirit is pure, to be set free, it " mounts upon high " ; " I think, therefore I am " ; keep the body fit that the mind may be fit ; believe that you are in health, and it is so ; the organization of the brain is the criterion for grading species in the evolution of man. It is, therefore, first with mental products that the historian as student of human affairs has to deal.

It is provident in accepting a limitation to explore its

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implications. If it be true that but for the existence of human purpose history, as the investigation of human affairs, would have no subject matter, it is also true that, unless directed towards an end, purpose is itself unmeaning. There is thus within the total field of history need of an investigation limited to the study of the fulfilment of human purpose, that is to say, of the progress of man towards the perfection of those abilities by which his nature is most readily distinguished. The history of civilization accepts this limitation. It is concerned with the processes and achievements whereby successive generations have assimilated the experience of their forbears, and have passed on to posterity a legacy richer than that which they inherited themselves. It is within the province of the history of civilization to evaluate each society and each age according to its contribution to the future. There are peoples that have contributed nothing to human progress as a whole ; with these the historian of civilization is not concerned. It is clear that the history of civilization has much in common with the history of education. Yet it does not follow that the histories of civilization and of education, because they are both concerned with progress, are either coextensive in field or identical in the angle from which they approach human affairs. Each can attend away from situations which are significant to the other. It is not for the history of civilization a primary consideration whether the experience, which produced a signal achievement of human thought or purpose, was shared generally by the contemporaries of its originator ; it suffices that it had birth in an age and in a society, of which it was therefore ultimately the expression ; it may have been unknown to many individuals, intelligible to few. To the history of education, however, this question of assimilation is critical. Again, for the history of education there is no normal human life that is barren. As childhood succeeds to infancy, adolescence to childhood, maturity to adolescence, there is personal progress, for there is, even within a society where adults

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consistently fail to realize the promise of their youth, individual acquisition of power to deal more comprehendingly with the situations of experience. Such progress is within the field of the history of education, without that of the history of civilization. Nor is the angle of approach the same. The subject matter of the history of civilization is made up of notable constructions in religion, morality, politics, science, art and industry, that of the history of education consists of individual increments in faith, character, sympathy, knowledge, taste and skill. A cathedral church, as that at Winchester, a statute of liberty, such as Habeas Corpus, a machine of destruction, such as a modern battleship, stand for the history of civilization as indications of cultural development, but have for the history of education significance only in so far as they have contributed to the development of human personality. Within a wider discussion the two views, the one speculative, the other practical, would doubtless prove complementary. They are not, however, to be confused because, where they overlap, they are mutually suggestive. It is well for the student of education to be reminded whither human progress has tended and what are the conditions under which the widest associations of individuals in knowledge and purpose have been observed; but, committed to pressing the study of human affairs home to its inception in the individual consciousness, he cannot neglect the investigation of origins about which the history of civilization is unconcerned and reticent.

The antiquity of education is coextensive with the antiquity of man. The first man, whoever he was, wherever and whenever he lived, by whatever structure or appearance he was other than ourselves, came of a distinguished ancestry. He was born into the world superior to all other creatures in endowment. What his forbears had gained, that he conserved and developed. An organism requires air, light, warmth, food and drink. Failing these, it cannot survive; supplied with these it may prosper. Of the supplies which

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it secures it makes its own appropriate use, growing, maturing, re-creating life after its own kind. The process of supplying these necessities has been described as a struggle for existence. It is certainly full of effort ; in the long run opportunity is for those organisms that are capable of seizing it, not for those to whom it is extended. There is a considerable divergence of opinion as to the contestants in this struggle. A determinist view sets the struggle as between the organism and its circumstances : it may be argued that circumstances are prepotent ; change of circumstance dictates organic change ; there are in the material world changes which are catastrophic, beyond purposive control, and lead to the extirpation of life ; the end of existence is then adjustment to circumstances ; since lack of adjustment means for the organism withdrawal of necessary supplies, let nature bend to circumstance. It is within this view to explain the universe mechanically, ultimately purpose does not count. Clearly this will not do, for the conclusion negates the premises. An argument setting out to explain living must remain within the facts of life, taking into account, it is true, instances both of the survival and of the disappearance of organic forms, but of disappearance only as in contrast to survival. It can include inorganic existence so far only as it supports the organic, not in virtue of extinguishing it.

According to a second view the struggle is not against but within circumstances, and the contestants are organisms of hostile nature, either because one preys upon the other, or because both compete for a strictly limited supply of those things that are necessary to their existence. Of these two alternative interpretations of interorganic struggle the first is open to the objection that success in the struggle for existence would ultimately entail the extinction of the successful organism. If the success of a carnivorous animal, for instance, is to be measured in terms of the destruction of its prey, there will arrive a point at which its dominance has reduced its food supply to a level insufficient to sustain its

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own vitality. The second alternative also is unsatisfactory. If it be true that competition is strenuous in proportion to the experience of similar needs, then the struggle for existence should most characteristically be set between individuals of like nature. To this corollary the phenomena of social co-operation, penetrating from man far downwards in the organic scale, present an array of contrary instances formidable less for their number than because the purpose, which they subserve, is actually to increase the supply of vital necessities through storage and the division of labour. Thus the hypothetical control of the situation by a strictly limited dividend of natural products breaks down.

A third conception of the struggle for existence is more promising since it carries the conception of organic purpose one step further. In this view the struggle is not between competing natures, but between the individual organism and its own nature ; extinction is the penalty paid by those forms which imperfectly express their nature ; survival is the reward secured by those that express their nature more completely. Thus set the struggle admits of calculus. Within critical situations there are three types of organic response which may be characterized : the first, as accommodation with curtailment of function ; the second, as adjustment with defensive specialization ; the third, as conquest, with offensive self-assertion. That is to say, the calculus is in terms of generosity of natural response. Within such situations those organisms are to be reckoned higher which have responded to circumstantial change by way of specialization rather than by way of curtailment of function ; for they have at least suffered no abatement of efficiency. Those organisms, however, which have responded to critical situations not defensively but through a new output of innate character, and have thus imposed upon circumstances their own purpose, are highest, for they have converted the critical situation to their own natural ends.

Such, in common-sense estimate and also increasingly by scientific demonstration, is the superiority of man, judged

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by his control of circumstances the highest in purpose of all living things : who even in his bodily form has left unexploited more of his essential nature than any other animal ; who as his capacity for somatic self-determination neared exhaustion, put up against circumstances a new offensive that was distinctively mental. When at some very distant date, which can with confidence be reckoned as not less than 25,000 years ago, the acquisition of higher mental functions reached its term in modern man, the human offensive, far from slackening, gathered momentum and has continued in rhythmic waves of progress as to the transfer of experience from forbears to posterity is added the augmented co-operation of contemporary experiences.

The Pacific Ocean extending for fifty-two degrees on either side of the Equator, and for eighty and one hundred degrees to the west and east respectively of Long. 180° , is at once the largest and most central expanse of land or water on the surface of the earth. Around and with the basin are assembled representatives of almost all the extant varieties of man, together with many peoples of local composition in which original stocks have been variously united either through intermarriage or by participation in common circumstances. There is no region in which the future relations between societies are politically less certain or more likely to prove critical. Along the north-western and north-eastern margins are opposed, in Asia, the Japanese, Chinese, and Indo-Chinese in North America, the Nordic, Alpine and Mediterranean races. Whether these populations be surveyed from east to west or from north to south they stand for dissimilar temperaments that have found expression in divergent purposes, methods and achievements. Within the United States of America, constitutionally more idealistic, economically more plutocratic than any other Occidental nation, it is the constant preoccupation of statecraft to devise the means whereby a democracy, in which one man out of six is of foreign birth, and one man out of ten is black, brown, or yellow in colour, may be

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prepared for moral, political and industrial liberty. Along the south-eastern margin the free intermarriage of men of white, brown, yellow and black races, has been productive of populations which have been claimed to include, for whatever that may be worth either to the individual or society, the most typical average specimens of humanity. The extremity of contrast is reached in the south-western margin of the basin where the thinly populated Australian continent, equipped with resources largely of imported origin and wholly of Occidental development, is in race and political organization the most exclusively Anglo-Saxon of the non-European territories of the British Empire. In modern history Tasmania to the south has been the scene of the least, as New Zealand within the basin of the south-east, of the most successful British experiment in the development of a backward people. Across the Torres Strait, Indonesia, unsuited for European settlement, supports a congested native population of varied and for the most part highly complicated antecedents.

Few, if any, of these problems are of a kind new to the Pacific region, or have there lacked solution in the past. Throughout the period of the settlement of its surrounding continents the central basin of the Pacific was distinguished by a Pan-Pacific atmosphere, effective through successive phases both for the composition of dissimilar cultures and for the amalgamation or fusion of distinct stocks. This atmosphere acted on peoples whose arrival in the basin must be attributed to many incentives. Some came after vague wanderings, others as fugitives, others again as pioneers of agriculture, trade, or dominion. Those who sometimes decry civilization on the ground that, in the process of becoming masters of their own souls and of that part of their surroundings which is non-human, men have not advanced equally in fellowship and goodwill, may find in the Pacific record reason to suppose that the deficiency, which they deplore, has derived from the artificial suppression of a capacity that is fundamentally human, and the

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material on which to base a review of civilized methods of instruction and administration.

3

When between the years 1859 and 1870, anthropological societies were established successively in Paris, London, New York, Moscow, Florence, Berlin and Vienna, the attention of anthropologists was in the first place directed mainly to the statement and exploration of problems of racial divergence and distribution. The need for such a preliminary investigation was great. Popular opinion drew a rough but ready distinction between men of white, black, yellow and red colour, vaguely supposed to be native to the continents of Europe, Africa, Asia and America respectively. Differences of average stature, of physiognomy, of growth and texture of hair were recognized; certain combinations of these characters were supposed to be typical of certain ultimate stocks. There was the self-satisfied view, influenced by an uncritical acceptance of the Biblical account of the Creation, Flood, dispersion of its survivors, selection of a favoured race, which either alone or conspicuously expressed divine purpose, that divergence from European standard should ultimately be explained in terms of degradation. On the other hand, various descriptions provided by travellers of peoples inhabiting remote parts of the earth, ran counter to the preconceptions based on these rough-and-ready distinctions. The founders of the new science were speedily rewarded with important accessions to knowledge that effected a wide expansion of a field previously limited to contemporary observation.

In the first place, human fossils discovered in Europe in the year 1857, when subjected to anatomical analysis and collated with others that had been discovered nine years previously, were found to constitute a type divergent from any extant race. These findings, while complicating the problems that centred round the origin of man, encouraged

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the hopes that a satisfactory system of racial classification might be effected by the application to skin pigmentation, hair and other characters of appropriate tests analogous to those employed by anatomists, and that such an investigation, if pursued on a sufficient scale, might throw light on the stages through which man had passed in evolution from one or more aboriginal stocks. These expectations have proved over-sanguine. For it is now clear that climatic and other circumstances have long been active in the modification of the few remaining races that can be credited with unmixed descent, and there is a complete lack of evidence that the ancestors of modern man ever approximated to the constitution of the aberrant fossil forms. This failure has been accompanied with a general acceptance of the view that it is zoologically no longer profitable to attempt to classify human forms in accordance with a scheme of genera and species. The alternative which for history remains most promising, because nearest to a common-sense view as to the nature of man, is that a classification may possibly be established on a scheme of variation from right type. In the meantime, as all students of human affairs must in candour acknowledge, anthropometry has made notable contributions to history, for it has been elaborated into a system which has rendered possible the accurate determination of a large number of somatic characters, certain varieties of which may be fairly assumed to serve as an index of antecedent racial experience. To the historian the value of this system is in proportion to its elaboration rather descriptive than explanatory. For neither has any single character proved satisfactory as a criterion of race, nor has any combination of characters been found constant within peoples to whom distinctive race can be fairly ascribed. This result is not surprising. The accurate measurement of somatic characters, can be applied directly only to individuals. The results secured from a number of individuals and for a number of somatic characters can be grouped by means of graphs ; a type thus determined can

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be accurately described. It does not, however, follow that any individual will completely correspond with the type of his group ; in proportion to the number of characters investigated the higher is the improbability that any individual will do so. Again, types may be grouped by means of graphs and a yet more general result be accurately stated ; in proportion to the number of types investigated is the probability that no single type will correspond with the composite type. It is clear that the application of such a method must be partial, and that its results must in proportion to their generality be proximate. The second body of evidence that came within the early survey of the anthropological societies was of an order that, since it was made up of purposeful modifications of circumstance, may conveniently be termed cultural. In the year 1838, a Frenchman, Boucher de Perthes, had published a work entitled *De la Création, Essai sur L'Origine et la Progression des Êtres*, in which he affirmed his belief in the traditional theory that a primeval race of men had been destroyed by the Flood, and gave an account of human implements which he had discovered in the valley terraces of the Somme in association with osseous remains of animals long extinct, and by him supposed to be of antediluvian date. This was not the first discovery of the implements of early man, but the acceptance of the authenticity of the Somme discoveries by the Royal Society of London in 1859 created a new department of anthropological study. Archæology was capable of supplying much that the anthropologist as yet lacked. It was concerned with the past, disclosed surprising similarities rather than unexpected divergences. By employing a stratigraphical method, akin to that of geology, it was capable of calling into contribution a further science to supplement anatomy in adding precision to research. It had, moreover, an obvious affinity to history, for it opened up a field that was intermediate between man and his external surroundings. The archæological record was, however, of a character that could hardly fail to be

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imperfect. Relics of the past were for all periods greatly, and for early stages almost solely, composed of imperishable materials. Yet it was reasonable to suppose that the men who had laboriously chipped flints made at least an equal and possibly a more spontaneous use of other materials of earth, fibre, wood, hide or sinew. Thus the organic and cultural evidences were alike incomplete, the anthropometric and stratigraphical methods alike incapable of dealing finally even with the available data. Anthropology had need of some more concrete assemblage of facts within which conservation, modification and transmission both of race and of culture could be observed in concurrent detail.

Anthropologists were well aware of yet a third field, in urgent demand of exploration, which had to a high degree this quality of presenting an assemblage of facts, racial and cultural, in the concrete and under circumstances definitely determined as to place and time, observable, moreover, in function and not as inanimate relics of the remote past. It was apparent from the observations of travellers, traders, missionaries, colonists and government officials that societies of almost every degree of cultural progress, from primitive savagery to the most highly developed civilization, were in contemporaneous existence in various parts of the world. The majority of available reports were unsystematic, or systematized to another end. Those of travellers were cursory; traders were not greatly interested in the native use of products, which it was their own purpose to market elsewhere; missionaries were zealous for religious conversion; colonists were concerned in the appropriation and development of estates, government officials in administrative problems. Each was somehow, with or without intention, an agent of change. Even under favourable circumstances, when the intentions of the intruders were amicable and their purpose either humane or scientific, civilization was destructive. As often as it marched with savagery its effect on savage peoples was that of physical and moral indigestion. Race degenerated under the influences of disease,

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alcohol and tribal warfare ; moral stability was shaken by the unselective imitation of cultural elements derived from a widely different complex of social values. Thus ground of the utmost importance to anthropological science was being rapidly and irretrievably lost. Research, which might extend the material for anthropometric survey or for archæological classification, was powerless to re-create syntheses between organic and cultural facts, once the societies exemplifying these had passed away. Yet it was within such natural and undisturbed syntheses that anthropologists must seek for light on material, which they had already in hand, and on other material, which, as they were beginning to realize, lay as fully within the province of anthropology as of history. A scientific method of approach was to be sought ; observers were to be trained on a new model ; if at all possible, the field must in the interests of science be preserved. But not only this. The disappearance of savage peoples when brought into contact with civilization raised questions of great moment in the study of man. Ultimately, the science of anthropology was concerned with human values physical, mental and material. Peoples once healthy and prosperous, also, as it transpired, surprisingly law-abiding and religious, were disappearing because their health, prosperity, customs and beliefs were not of the same character or protected by the same sanctions as those enjoyed by more favoured peoples. The assumption that they were physically degenerate or morally bad was not supported by internal evidence.

For the exploration of the new fields an indispensable qualification was that of linguistic proficiency ; for the ability to converse with natives is the necessary passport of the observer to the penetralia of group organization and of individual experience. Anthropologists turned to the contemporary science of philology and found cause to accept its conclusions with reserve. Amongst savage peoples language exists in the form of dialect, and the attempt to reconstruct parental languages from this fundamental basis

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presented formidable difficulties. The currency of a dialect is so limited by local isolation as to subdivide the field of observation into small areas and the contribution of a single observer to a regional survey was thereby narrowly limited. Moreover, the dialects of adjacent groups were found in some regions to be so entirely lacking in linguistic affinity as to argue derivation from entirely different forms of speech. Even where conditions were favourable to the hypothetical reconstruction of the parent language the value of the evidence which might thus become available to the anthropologist was relatively small. Linguistic data do not of themselves supply reliable indications as to racial or cultural antecedents, and at best rank solely for corroboration. Whilst similarity between the structure of languages is suggestive of former groupings of population it is reticent both as to the date, locality and density of these; similarities of vocabulary are even less conclusive, for they may signify but a temporary contact in the past or the intrusion of an alien influence from outside. The evidence to be derived from linguistic divergence, of which dialect is the clearest, and for the history of education much the most important indication, is positive only in so far as it testifies to the emergence of local systems of values, which in origin derive not from collective but from individual experience. Competent observers of retarded peoples have remarked the survival in ritual of archaic words of forgotten meaning, the abundance of synonyms employed in oratory, the popular dependence on gesture to communicate the detail of a situation of ordinary importance, and the conservative character of the vocabulary of domestic occupations. Thus each of the three logical functions of language, communication, precision of thought, self-expression, needs to be studied under circumstances of vital importance. Such circumstances attach mainly to the exigencies of an individual life, and reach maximum illustration in men of commanding personality.

It has been computed that the economic stage of savagery,

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a condition of vagrancy, dependence for sustenance on the wild products of nature and lack of legal sanctions, is capable of associating an average population of three hundred and fifty individuals ; but that, since the area of territory required to support at this stage a single hunter is according to the nature of the country and of its food products from 10 to 78 square miles the effective groupings of population for lowest savages are actually far smaller. That barbarism, a condition of settled habitation, supported by the arts of agriculture or pasturage or both, hereditary leadership, customary legal procedure, is capable of supporting an average society of 442,000 individuals ; and that an area capable of supporting a single hunter might suffice for the sustenance of a thousand farmers. That civilization, distinguished by the ability to construct written records, the development of industry and commerce, the establishment of deliberative legislative and judicial assemblies and of an administrative service, is capable of supporting far greater integrations of society. The average populations of the five most progressive and populous of modern peoples amount to eighty millions ; the British Empire occupies about one quarter of the habitable surface of the earth and its population exceeds one quarter of the estimated number of the human race ; within an area of 70 square miles the population of London exceeds eight millions. Such tremendous aggregations of population, the product of individual thought, purpose and need for community of experience are not to be explained as instinctive but as voluntary ; as such they are a singular affirmation of the nature of man.

Savagery is a condition of fixed values, wherein conservation is generally accounted good, change bad ; and of few abstractions, least of all do savages easily draw an antithesis between the individual and society. Existence is precarious equally for each and for all members of the group, who live dangerously close to disaster, by famine, pestilence and the act of God. An individual passes through crises from the cradle to the grave, at birth, in infancy, at puberty, marriage,

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parenthood and death, occasions of danger to be safeguarded in the interests of the whole community. Savagery has been compared with childhood, barbarism may more aptly be compared with the turbulent instability of adolescence. It is a level within which increase of leisure, due to the assurance of the food supply and the growth of property, opens a career to talent and values are frequently remade. It is perhaps through apprehension of hazardous innovations that barbarians are commonly at pains to conserve the past by communicating their beliefs and practices to their children, whom they often subject to a discipline of great severity.

From the great cities of modern civilization crisis is never absent. Youth and strength flock thither to confront it, confident that they will find their opportunity and seize it. Hence an intensity of the struggle for existence unknown either to savagery or to barbarism. Public opinion holds that the circumstances of no individual should within a civilized community be permitted to become catastrophic. Government, philanthropy, and medical science co-operate in salvage. Progressive peoples thus possess an experience of the human struggle for existence, which they should be ready to use. We may conclude that in contacts between peoples of higher and lower development the onus of responsibility for establishing relations which are sympathetic and co-operative rests with those who have gone furthest on the road of human culture.

But it would be insincere to represent this obligation as solely dictated by sentiments of extraneous philanthropy. Whatever may be the considered judgment of the future, the common sense of the present holds the European war of 1914-1918 to have declared civilization on many accounts insolvent, an opinion endorsed by the recent depreciation of European prestige in the Orient. Out of the ashes of that conflagration have emerged two great educational demands. One is for an adult education which shall be not merely the making good of a system of instruction acknowledged to

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have been defective in the past; nor the replacement of individuals in possession of such instrumental knowledge as was theirs when they quitted school; nor the remedial treatment of those who in early adolescence have found themselves committed to occupations leading for the expansion of personality nowhere: but for all an opportunity to standardize their experience in mature life, and to cherish the ideal of purposive and intellectual liberty. To those active in response to this demand the study of uncivilized education, in many respects the converse of modern practice, may be not without discipline and encouragement. The second demand is for an educational policy to be developed by civilized peoples that, under the League of Nations, have accepted mandatory powers in respect of hitherto unprogressive peoples, and have interpreted their trust in terms not of exploitation but of development. For this crusade, undertaken from considerations of political prudence but to be pursued as a manifestation of goodwill, it is desirable that public sympathy and understanding should be enlisted. It is well that Occidental civilization should be defended from the imputation of destructive efficiency, even whilst its solvency remains in doubt. But the responsibility of the powers becomes more formidable the more closely it is examined. There is no one programme that can in application fit the needs of peoples of different cultural stages, hardly one suitable to peoples of the same cultural level but of divergent experience. Government has need of men competent to investigate the customs and aptitudes of unsuccessful peoples. History has perhaps something to gain by the application of standards which obtain within the science of education.

CHAPTER II

THE PRIMATE SUCCESSION

I

HISTORY opens towards the close of the Pliocene division of geological time, when the surface of the earth, long troubled by volcanic disturbances and the uplift of mountain systems, was comparatively at rest and the land masses of the world had assumed almost their present altitudes and configuration. At a conservative estimate the Pliocene division was some 500,000 years ago succeeded by the Pleistocene, in which the most elevated regions of North America, Central Asia and North, Central and West Europe passed under three or four distinct glaciations, that reduced wide expanses of adjacent territory to sub-Arctic conditions. These periods were separated by much longer interglacial phases, when the ice retreated behind its present confines, and the areas of previous devastation supported a renewed and progressive vegetation.

Of all human fossils that which must on the geological evidence be accounted the most ancient is a skull that was taken from below a mid-Pliocene bed of lava in Calaveras County, California. These remains indicate an individual of the North American variety of modern man. The exploration of the Red Crag, a Pliocene formation in Britain, has disclosed within its higher levels at Foxhall, near Ipswich, two undisturbed horizons containing scattered flints; of those in the upper horizon some had been chipped into shapes serviceable as implements for scraping and for boring, others had been burnt. Taken as a whole, the

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Foxhall evidence suffices for the recognition of both horizons as ancient habitation levels, once occupied by men practised in the use of fire and in the manufacture of tools. East Anglia has so far yielded no skeletal remains contemporary with these cultural data. In the present state of our knowledge there is no ground for assuming that East Anglian man was not, like the Calaveras remains, of modern form.

Fragments of a skeleton discovered near the village of Trinil, in Java, belong on the evidence of the associated flora to the early Pleistocene. These remains are in the opinion of all authorities more nearly those of a man than of an ape. The skull is long, low and furnished with heavy brow ridges. In these characters it resembles the chimpanzees and gorilla, great apes now indigenous to Africa, rather than the orang-utans of the Malayan region to which it belonged. The brain case, however, departs in capacity and indentation from that of any known ape, indicating a brain in volume four-fifths greater than that of an adult male gorilla, and furnished with an expansion of those surface areas, which are of latest development in the human child and enable man to distinguish, comprehend and originate articulate speech. The straightness and length of thigh-bone of this individual, which has been named *Pithecanthropus erectus*, and appears to have been a female, have been taken to indicate that it was of a stature somewhat exceeding modern European average, and that it walked erect. The thigh-bone had an outgrowth due to disease or to a wound of long standing; survival in this condition is suggestive of sympathetic and intelligent companionship. The evidence for the remote bond that unites man in common ancestry with the apes has accumulated chiefly round a point prior to the emergence of anthropoid form. It is to be assumed that from that point descends in the evolution of man a long line of forbears, who were less than human, followed by a much shorter line of definitely human ancestry. If transit from the pre-human to the human be determined by the acquisition of ability to

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establish relations beyond the scope of a purely animal existence, *Pithecanthropus*, whose claim to humanity is chiefly intellectual, had crossed that threshold. Nevertheless, the Trinil remains represent, though not the earliest, much the least effective form of man known to science. His habitat was probably favourable to an existence of extreme simplicity; we are without trace of any of his cultural attainments.

It is obvious that these first data of history are partial and discontinuous. The human record is similarly incomplete throughout the Pleistocene. Cultural and organic remains continue to support each other inadequately far into post-glacial time. Pleistocene man is known to us through his fossilized remains in six distinct forms. Of these one is modern in the sense that all human bones of post-glacial date and all extant races may be classified within it, but not in the sense of recent emergence; for it has, so far as we know, of all forms the highest antiquity. Its continuity is not less remarkable than the width of its early distribution. During the Pleistocene modern man penetrated not only to America but also to Australia and to the extreme south of Africa, whence no other forms have so far been reported. The discussion of modern man is less than that of any other form subject to restrictions of time and place. The remaining five forms of man are not known to have survived the Pleistocene; in contrast with the modern form they may be termed archaic.

Authorities are in agreement that the modern form, distinguished as *Sapiens*, stands by reason of complexity of brain at a higher level of mental efficiency than any other, and that the characters which variously differentiate the archaic forms are "low," that is to say, highly divergent from corresponding characters in the most successful varieties of modern man. Most of these low characters approximate to bodily specializations typical of the higher apes. They also agree that, with one dubious exception, the relation of the archaic forms to *Sapiens* cannot be ancestral. The

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divergences have gone beyond the point from which the anatomist can assume recovery, either through radical change of circumstance or selective cross mating. Of the five archaic forms three, Heidelbergensis, from Prussia, Rhodesiensis, from Northern Rhodesia, and Neandertalensis, from West Europe and Syria represent an ascending scale in human efficiency, and it has generally been assumed that they, together with Sapiens, are to be traced to a common descent from a hypothetical form that is known to anthropologists as Homo. Of the two remaining archaic forms all authorities concur in excluding the Javan Pithecanthropus from this descent and in tracing his ancestry back to a point antecedent to Homo; Eoanthropus, from the British South Downs, is anomalous. Judged by the shape of his jaw he is yet more ape-like than Pithecanthropus, judged by the shape, though not by the capacity of his brain-case, he is more modern than Neandertalensis. Although the anatomical evidence is sufficient neither for determining the order of emergence, nor for fixing the relationships of the forms of man, it is generally to the effect that the Pliocene and Pleistocene divisions of time were critical for man and the Pleistocene catastrophic for archaic forms, that had in surrender to circumstance taken on specializations distinguished by ape-like characters that in the modern form from Calaveras man downwards have been repressed. The term archaic may then be defined as a designation applicable to specializations distinguished by throwback to characters which in process of evolution have ceased to be natural to the most successful representatives of the human stem.

Failing any clear interrelation between the facts with which the human record opens, and in view of their great antiquity and extreme regional separation, the obvious expedient is to refer them to a wider unity, within which they may, in correlation with other facts, acquire a significance which they lack in isolation. This unity, which may be termed the Primate Succession, is contained within the associated data of geology and zoology, which provide

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chronological, and of geography, which provides topological information.

The zoological order of Primates embraces two sub-orders termed on account of their culmination in highest types, Lemuroid and Anthropoid. The former comprises three families, Chiromyids, aye aye; Tarsiids, tarsiers; and Lemurids, lemurs: the latter five families, Hapalids, marmosets; Cebids, American "monkeys"; Cercopithecids, baboons and Old World "monkeys"; Simiids, gibbons, orang-utans, chimpanzees, gorilla; and Hominids, man. In present distribution the Chiromyids are confined to Madagascar, the Tarsiids to Indonesia, the Lemurids to the tropical forests of the Old World. The Hapalids and Cebids belong solely to the forest areas of Central and South America. The Cercopithecids are widely scattered over the tropical and sub-tropical regions of South-east Asia and of Africa. The Hominids alone are of ubiquitous habitat. All evidence points to the Northern Hemisphere as the cradle of the order.

Geologists distinguish a succession of Eras of time. In the last of these termed Cainozoic, mammalian forms of animal life became dominant and so gradually representative of species now extant, that the divisions of the Era are designated Eocene, Oligocene, Miocene, Pliocene, Pleistocene and Holocene, according to the increase in the proportion of modern forms. The duration of the Cainozoic Era has been variously calculated. Computations based on the accumulation of surface deposits have provided estimates of 4,200,000 and of 6,380,000 years. Another based on the formation of lead through radio-activity in rocks has furnished extreme estimates of 50,000,000 and of 15,000,000 years. To the Eocene division, which all authorities concur in regarding as of great length, the lower of these radio-activity estimates has attributed a duration of 7000 years almost equalling those of the Oligocene, Miocene, and Pliocene divisions taken together. Primates are known to us throughout the Era: Lemuroids from the Eocene,

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Cercopithecids and Simiids from the Oligocene, Cebids from the Miocene, Hapalids and Hominids from the Pliocene.

The dominance of mammals in the Cainozoic Era was the sequel to a long-established evolution of mammalian forms from a primitive reptilian ancestry. Diminutive in size, and greatly dissimilar from the gigantic dinosaurs, highly specialized and hostile representatives of the same ultimate stock, the first mammals pursued three, possibly more, lines of parallel development. It is reasonable to suppose that the less highly organized lines developed most rapidly, and it is certain that the marsupials outstripped the higher placental mammals in distribution. Their remains have been discovered both in North America and in Europe in early formations of the Era preceding the Cainozoic ; their descendants still characterize the indigenous faunæ of Australasia and South America. The traces of placental mammals, destined to replace the marsupials in the Northern Hemisphere, begin to appear in the geological division which immediately preceded the Eocene. The forms are small and adapted to an insectivorous diet, which they perhaps diversified by the capture of small lizards, birds, and weaker members of their own class.

In the Eocene a vast latitudinal ocean, with northerly channels, divided the land masses of the Northern Hemisphere into two continents, of which the larger comprised Central and East Asia, North and Central America, Greenland and Britain, and the smaller Scandinavia, the North European plain, France, Spain and the Atlas Mountains. A steady increase of temperature in the northern continents favoured the extension of tropical forests, and some of the primitive insectivorous mammals sought safety in an arboreal existence.

Life in the upper world of the Eocene forests offered to the arboreal mammals circumstances more favourable to spontaneous development than those attending existence on or under the ground or in the water. It was more safe, scarcely

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less spacious ; it provided variety of diet, of light and shade, of hand and foot hold. Impressions of vision, touch and hearing surpassed in value those of smell. The corresponding centres of the brain accordingly expanded in bulk, attaining a wider range and a greater accuracy both in registration and in muscular response. Many transitory forms, doubtless, developed amongst the arboreal mammals. We may suppose that for every successful form that became established many were unsuccessful and failed to survive. Amongst the survivors success was proportioned to capacity to make a versatile use of the new environment and to the expenditure of plasticity rather in mental growth than in physical specialization. Such a constitution being at once highly spontaneous and malleable predisposed these forms to experimental behaviour, that was hazardous and created a wide range in specific development.

The most resolute retention of primitive characters, combined with the highest complication of brain is found amongst those arboreal forms of the Eocene which became definitely primate. There is reason to suppose that their mental superiority resided above all in the growth of the visual and auditory centres of the brain, a development associated in the Anaptomorphid family, which was represented in both the Eocene continents, with flatness of face. This family in consequence so closely approximated to the type of the modern tarsiers that it has been described as Tarsioid.

About six inches in head and body length, the size of a small rat, the tarsier is furnished with a ratlike, tufted tail. Its body is covered with thick, soft fur, the head is large and round, with a small pug-shaped nose and great ears. But the most conspicuous feature of the tarsier is supplied by the enormous eyes, to which the flatness of its face gives a forward position, permitting of a considerable overlap of the separate fields of vision. To this is added the unique ability of turning its head at an angle of almost 180° with the axis of the body. Thus the tarsier can look directly backwards.

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As the head turns with a deliberate action, a succession of points come within the field common to the two relatively immobile eyes. This panoramic aptitude, which is not known to have been developed in any other animal, is, however, probably of low power, for it appears to be ineffectually supported by acts of voluntary attention. Observation of tarsiers in captivity tends to show that their experience is broken up by irregular alternations characterized on the one hand by apparently complete lethargy, and on the other by abrupt, almost mechanical movements, as though certain situations or combinations of impressions command their automatic response, whilst to others they are almost wholly lacking in sensitivity. Such behaviour indicates a primitive level of awareness, which may be almost original in the primate order.

Arboreal life set a limit on the number of offspring produced by the early primates at one birth ; for in this active existence the mother had need of unimpaired agility during pregnancy and was subsequently forced to carry her homeless young with her. The tarsier normally produces a single young, which is born in such independence as to be capable of moving about by itself on the second day after birth. To transport it the mother picks it up in her teeth and places it so as to cling head downward to her abdomen, where it anchors itself to a posterior teat which secretes no milk ; it is fed at its mother's breasts. Of efficiencies that the growing tarsier must acquire the chief are those of concealment by day and of agility in pouncing upon and dexterity in handling its insect prey by night.

A dual importance attaches to the tarsier for the purpose of the present discussion. In the first place, this almost Eocene form furnishes a conspicuous and basal example of evolutionary arrest, in the second, the very closely allied Anaptomorphid stock apparently became the progenitor of the five families of the higher Anthropoid suborder of primates. It is, therefore, pertinent to consider in what manner the tarsier has fallen so remarkably short of its near

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relatives in development, and in what characters the far more successful Anthropoid forms are differentiated from it. The most important contribution to experience that the tarsier derives from panoramic vision probably consists in the repeated registration of impressions as to the shape of its own body. It may be that such impressions, if generally shared by the Eocene Tarsioids, conduced to selectivity in mating, and created a critical distinction between individuals of conservative and of experimental proclivity, whereby the latter, exercising preference for characters that were rather the complement than the duplicate of their own, became parental to a progressive progeny.

The brain of the Eocene Lemuroids was built up by spontaneous reaction to arboreal circumstance. Spontaneity is not, however, to be assessed solely in terms of mentality, but of the total organic purpose, of which the brain is the creation and its growth the index. It is to be estimated in biological terms of growth that involve consideration of the versatility of the organism and of its vitality. The attempt to apply the method of progressive analysis to the explanation of a living form entails passage from the rigid to the plastic elements of its constitution. This sequence leads from skeletal pattern to musculature, from musculature to nervous system, from nervous system to the undifferentiated and youthful plasms from which cellular tissues are constantly renewed. We thus stand to acquire successive increments in our knowledge of a purpose that is never wholly explicit, and even in man is but partially comprised within the control of the recording and directive brain. Ultimately it is neither from the visual efficiency of the Tarsioids, nor even from the structure of the Tarsioid brain, that a diagnosis might conceivably set forth in full the cause that separated the arrested tarsier from more progressive members of the Anaptomorphid family. Such a diagnosis would rather begin, where the analysis had ended, with an investigation of plasmic conditions and thence lead upward through a succession of increasingly complex determina-

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tions; for it is in any evolutionary study a sound maxim that we should aim at explaining consequents through antecedents, and not antecedents through consequents, the oak from the acorn, and not the acorn from the oak. It is for history a corollary that a hypothesis that is good for the explanation of the less is available as an analogy for the explanation of the greater, and that the converse does not hold. That which is true of the individual is likely to be not wholly untrue of the society or of the race of which he is a member. We may, on the other hand, hesitate to rely upon a generalization made from social or racial phenomena for the explanation of the individuals, which a society or race comprises; for they, unlike society and race, have substance both in bodies and minds.

2

Climatic change at the close of the Eocene introducing cooler and drier conditions in the Northern Hemisphere profoundly influenced the primate stock. Central Europe suffered an abatement of temperature comparable with that of 15° of latitude. The Lemuroids disappeared from the Northern Hemisphere to be lost from the primate record for a space to which the least radio-activity estimate allots over six million years. Most of them probably perished. A minority seems to have made good its retreat southwards in the directions of Central America and of South-east and Central Asia in the larger continent, and of the Atlas Mountains in the smaller.

In their passage south the Lemuroids of America were confronted within the funnel-shaped cul-de-sac of the central isthmus, with the critical situation of an overcrowded environment, which provoked gregarious habits and to which those least wary and most fixed in form succumbed. Other plastic forms of Tarsioid type became progenitors of the New World Hapalids and Cebids. These in turn became within the equatorial forest narrowly

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restricted in distribution and further specialized for an arboreal existence on lines divergent from those of the Old World apes. Their dentition follows other formulæ, their organs of smell and of hearing are dissimilar; the Hapalids have lost the power to separate their thumbs at will from the other digits, in the Cebids the thumb is sometimes rudimentary or even absent. For these reasons the descent of the New and Old World apes is generally assumed to have been collateral, and the Hapalid and Cebid forms in consequence fall away from any possible connection with the ancestry of man.

The second route pursued by the Eocene Lemuroids through the larger continent is a matter of inference. South-east Asia is possessed of a distinct fauna and is by zoologists recognized as a distinct region, termed Oriental. This is the home of the tarsier. It contains amongst Lemuroids, *Nycticebus*, the Asiatic "slow lemur," amongst Anthropoids *Nasalis larvatus*, an aberrant form of Cercopithecoid and the Simiid orang-utans. It is for various reasons difficult to suppose that these forms reached the Oriental Region from the west. The route thence was closed throughout the disturbed and critical divisions of the Oligocene and Miocene, to which must, according to the radio-activity estimate, be conceded a joint duration of not less than six million years. The tarsier is an arboreal form of which the route must have lain through continuous forest. *Nycticebus* is of an extremely sluggish temperament, paralleled amongst other extant lemurs only by African forms, that appear in West Africa at the termination of the shortest route by which that continent was attainable from Europe. *Nasalis* is of unique appearance, being furnished with a trunk-like nose, and of water-loving habit, a combination not easily separable from tropical conditions. The orang-utans move slowly and with great circumspection. Amongst the Simiids their excessively abbreviated lower limbs show least habituation to terrestrial life and the sugar-loaf doming of the crown, that gives amplitude to the rounded skull, is a feature

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unique in apes, and of great significance in the natural history of man. Huxley remarked in this genus a closer approximation to the form and complication of the human brain than in any other Simiid. Finally the orang-utan has retained primitive characters of wrist and vertebral column which render the former less supple and the latter less rigid than in the two African genera of Simiid and in man. It seems then that the primate forms indigenous to the Oriental Region may be taken in illustration of the principle of Uniform Evolution, which, as a comprehensive statement of collateralism, recognizes that under equivalent conditions like natures descended from a common ancestor tend to develop along approximately the same lines. To this principle it seems safe that we should assume man to be no exception.

It is to be remembered that the greater continent of the Eocene contained towards the west a third inland area, whither also, it may be assumed, that towards the close of the Eocene Lemuroids were likely to retreat to encounter conditions that were highly favourable to the further development of young and plastic forms. Central Asia has been claimed as a dispersion centre for Lemuroids in the Miocene division of time, and for Hominids from the Pliocene division onward.

The lateral expansion of the second and smaller of the two northern continents of the Eocene offered to the Lemuroids a retreat more kindly than that which proved destructive to their suborder in Central America, but less favourable to progressive evolution than Central Asia. They appear to have penetrated southwards through Europe in an unhurried withdrawal before the increasing rigour of the northern climate, and by no means under such pressure as to dispose them, through overcrowding, towards gregarious habits. There remained for those competent to exercise discretion opportunities for selective mating, and the Lemuroids of Europe either became fixed within their own suborder or began to evolve from the Tarsioid stock forms either of Cercopithecoid or of Simiid character.

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The Oligocene division of time, to which the radio-activity estimate allots two million years, was critical for the distribution of the European primates. In it occurred the first phase of the crust-foldings of the earth which were to determine the modern relief and configuration of the Old World. Britain became separated from Greenland. The Strait of Gibraltar opened dividing the Atlas Mountains from the Iberian Peninsula. To the south the Saharan area rose uniting the Atlas Mountains with the Guinea Coast, and giving a new zoological unity to Africa. The Lemuroids which had gained the Atlas Mountains were thus cut off upon the north. Those that remained in France and Spain probably perished; in the south of France Oligocene strata have yielded a single Lemuroid jaw. The new channel gave ingress to a great sea, which on the south invaded the Tripolitan area of Africa, and on the north occupied Central Europe. A long, slender causeway, that projected westwards from the Pamirs to the Balkans, divided this sea into two gulfs, within the northern of which the Caucasus lay as an island. Along this receding causeway lay a line of retreat for primates from the vast inundations of Europe towards Central Asia.

But for the Lemuroid jaw discovered in France the primate record of the Oligocene belongs exclusively to Africa. To this period may be assigned the migration which has rendered Central Africa, from the Guinea to the Zanzibar coasts, the most wealthy region of Lemuroid life with the exception of Madagascar. Here the West African slow lemurs or pottos duplicate *Nycticebus* of the Oriental Region, and the long-tailed, active, and ubiquitous galagos, which like the Hapalids produce more than two young at a birth, are of colonial habit, building in trees nests which appear to be in some degree communal dwellings.

The fossil record of the Oligocene testifies to the early development of higher primate forms along a line of migration that led from the Atlas Mountains eastwards past the border of the Tripolitan Gulf and came to a terminus in the

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Fayum district of Egypt. The Fayum remains are those of two primitive Cercopithecids and of *Pro-pliopithecus*, a diminutive and tail-less Simiid, which may be ancestral to the gibbon.

3

To the great Miocene division of time the radio-activity estimate allots four million years. The crust-folding of the surface of the earth, initiated during the Oligocene, was intensified in a succession of local elevations and subsidences accompanied with volcanic disturbances. Of so vast and various a period as a whole it is clearly possible to speak only in very general terms. But it would seem that at one time or another, and possibly contemporaneously, all the great land masses of the world save Australia became coherent. It is at least certain that no other division of the Cainozoic Era was equally favourable to great terrestrial migrations.

The migrations of animals may be graded in accordance with their mental content as periodic, fortuitous, impulsive or spontaneous. To the first class belong migrations of seasonal incidence, which are habitual in some insects and in many fishes and birds. Such migrations are, so far as the subject is concerned, inevitable; their inhibition occasions unrest. The level of consciousness is probably reduced during migration, for migrating birds, and amongst animals lemmings, are known to hurl themselves to destruction against obstacles, which they would ordinarily avoid. An instinctive migration characteristically comes to an end in a situation of detailed recognition, which stimulates habitual and accurate performance. To the second class belong examples of vagrancy in the absence of obstacles, which, were they present, would control movement without the sensation of restraint. Thus herbivorous animals may graze forward in the wake of a leader, moving when he moves and pausing when he pauses, without other direction than the unimpeded line of good pasturage and without any

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abatement of ordinary awareness. A fortuitous migration characteristically reaches its terminus before an insuperable obstacle. To the class of impulsive migration belong examples of departure from unfavourable conditions, such as climatic change, failure of food supply or the inroad of enemies. An impulsive migration may be leisurely or, as in the case of the flight of animals before a prairie fire, precipitate. It is characteristically occasional, compulsory and dominated by the conscious search for a situation from which the hostile influence is absent. Spontaneous migration is of the character of a voluntary emancipation from restrictions, which are burdensome because they are felt to be repressive of natural inclinations or aptitudes. It is thus an expression of individual initiative and highly favourable to the systematic exploration of new situations. It implies a level of consciousness to which few animals have attained, but it may be illustrated by the departure from the herd of such males as the rogue elephant or the mustang stallion. The latter is known to ranchers as a pest. It is itself irreclaimable and is prone to collect mares, which it guards from reversion to domestication.

The great inundations of the Oligocene depleted the fauna of Europe. The geological record testifies to the total disappearance of marsupials and to the survival of only about three mammals. The previous fauna was replaced by representatives of genera in most cases now extant, but in primitive or collateral species. These immigrants, including early forms of elephant and of rhinoceros, began to arrive from Africa across the Iberian landbridge early in the Miocene, when the climate of North Europe remained sub-tropical, and spread through France and Belgium to the North German plain. Africa was probably at the same time receiving ungulate and carnivorous forms of Asiatic origin along the Arabian landbridge. Thus was set flowing a stream of vagrant migration which travelled clockwise towards North America. As the Miocene advanced the climate of the Northern Hemisphere grew drier and colder,

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winters became more severe, and plants moved southwards. A great belt of temperate plains replaced the sub-tropical forests of North Asia, providing optimum conditions for grazing species, that wandered widely across the single continent. These conditions were critical to the forest-living primates that had developed in the warm and humid climate of Central Asia. In the restricted forests it is probable that many weaker forms succumbed to famine and disease, others took part in an impulsive migration of gathering momentum towards the south-west.

This migration was probably effected by a succession of forms, of which the specialized and non-gregarious Lemuroids were amongst the earliest to migrate. Those which survived the journey found an asylum in Madagascar which received from this source, as also from Africa, a fauna that though less archaic than that of Australasia connects closely with the Eocene. One-half of the entire mammalian fauna is Lemuroid, and this island contains three-fifths of the extant species of that suborder. No extant lemur exceeds two and a half feet in head and body length, but *Megaladapis*, an extinct form that survived the Pleistocene, attained great size and possibly equalled in bulk a large mastiff or the greatest of living baboons. The primate fauna of Madagascar also includes the entire Lemurid subfamily of the Indrisinae, the most highly organized of all known lemurs. Although confined to two unprogressive families its contribution to our knowledge of the process of development within the order is important, for it illustrates under approximately aboriginal conditions principles that are apparently of general application. In attaining to a higher form it was possible for an ape either to fall away from the right line of successful evolution by developing tendencies repressed in other members of its family, as did the Hapalids, or to achieve a useful simplification such as fitted the chimpanzee, gorilla and man to terrestrial life. *Megaladapis* attained for a lemur immense size, but failed to achieve a simplification of dental formula, that has been

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effected by all extant lemurs, and has been carried further in all Old World Anthropoids. The Indrisinae, on the other hand, that exceed all other lemurs and also the American apes in this simplification, have in their highest genus *Indris*, which is in habit diurnal and produces but one young at a birth, attained the highest bodily and mental organization as also the greatest size of any extant lemur. The Indrisinae are not surpassed by the most solicitous of the American Cebids in the care of their young.

It may be assumed that the leisurely retreat of the non-gregarious Lemuroids from the diminishing forests of Central Asia was succeeded by a more precipitate migration of Cercopithecids. The increasing rigour of the northern climate was exaggerated by the uplift of the Himalayan massif; the tide of animal migration across the Arabian landbridge increased in volume. Species of extreme arboreal specialization may have travelled first, mothers after the manner of the Cebids bearing their clinging babies on their hips or back and carefully escorting their half-grown young. Indications of the congestion of the route may be recognized in the diversion eastwards to the Punjab of the ancestors of the modern langurs, and in the general development amongst these arboreal forms of gregarious habits, which belong neither to the Lemuroids nor to the lowest or two highest classes of Anthropoids.

If the specialization of the arboreal forms must be assumed to have been early, the terrestrial specialization of the baboons, the least highly organized subfamily of the Cercopithecids, must have been earlier still. The baboons are the largest and lowest representatives of their family and the most gregarious and ferocious of all Old World apes. It is possible that their ancestors had already in the Oligocene become, as a result of the Asiatic inundation, outliers from the tropical forest and frequenters of the high plateau. Such a condition of life was likely to prove critical, making for the survival of physically powerful forms, and for a rapid specialization favourable to the emergence of archaic

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characters. The baboon stock in a rapid expenditure of somatic plasticity became accommodated to an exclusively quadrupedal mode of progression, analogous to that of the Hapalids, and developed, like the Lemurids, a doglike muzzle together with a long and extremely flattened skull. Not only did these modifications retard the development of visual efficiency, but they were accompanied by a projection of the nostrils, indicating a reversion towards the primitive dominance of the olfactory sense. There is within the primate succession possibly no more striking contrast than that between the diminutive Simiid *Propliopithecus* and the baboon form, which may be contemporary developments under circumstances predisposing respectively towards constitutional balance combined with mental development, and somatic specialization combined with mental arrest.

But the forests of Central Asia continued to provide asylum for the most characteristic representatives of the primate order. Large species of robust constitution and still endowed with a considerable residuum of plasticity resisted the impulse to migrate. It seems that we must provisionally assume these forms to have belonged to two distinct stocks, Hominid and Simiid, reacting in some considerable measure conformably under similar circumstances, but with increasing divergence in the character of the struggle, in which each was unconsciously involved, between the capacity for growth and the proclivity towards specialization. Our immediate concern is with the more specialized and less successful Simiid stock, concerning which alone we have actual information. Perhaps their weight had already forced them to relinquish the use of tree-tops as avenues of travel and to confine themselves to large branches and tree-trunks. Such foothold would be favourable to the development of an axis of support lying centrally between the great toe and the remaining digits. As the forests diminished these large apes would be driven to frequent the ground in search of new supplies of food, the fruit and shoots of shrubs, the larvæ of insects concealed in

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decayed timber, ants, perhaps honey, and tubers. Search for these demanded more delicate discriminations of touch, smell and sight. Variety of diet stimulated taste, there was need of close concentration on the business of food supply ; the apes had descended into an area of danger and had need of a wide visual horizon. Such new values could not but react on the structure of the brain. They encouraged the assumption of an erect posture, for awareness resided more in vision than in smell. Ungainly on the ground, because unfitted either to progress on all fours or to walk upright, the great apes adopted in self-defence the short, swift rush, closure and use of powerful fighting fangs, which is their characteristic form of attack. Need of such methods was chiefly experienced by males, which in consequence developed large and tusk-like canines. To balance such movements of the jaws the brows became crowned with great ridges, the skull flattened and elongated ; in the gorilla the skull of the adult male is reinforced with bony crests along the top, and in the occipital region at the back of the head.

In the concluding phase of the Miocene the causeway that projected westwards into the central Eurasian Sea became an isthmus, and the crust-folding of the surface of Europe produced a new distribution of land, which tilted below sea-level towards the north-west and became elevated towards the south-east. Meanwhile, the climate of North Europe became increasingly dry and cold. The Pliocene division of time, to which the radio-activity estimate gives a duration of from one to two million years, followed without any such stratigraphical break between the deposition of rocks as separates the Oligocene from the Miocene. To this period of the upper Miocene and lower Pliocene belongs a dispersion of higher primate forms from Central Asia.

The earliest remains are those of *Pliopithecus*, a Simiid probably descended from the Oligocene *Pro-pliopithecus* and scarcely distinguishable from the gibbons that now inhabit the Oriental Region. This form has been identified in southern France, where it lived in the Middle Miocene ;

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thence, after the central causeway had bridged the Rhone Valley, it may have made an early retreat. The modern representatives of this far-travelled stock are of delicate constitution, extraordinary agility, and omnivorous diet. They surpass all other extant Simiids in ability to maintain an erect posture in walking both on the branches of trees and on the ground, and in their partiality for high altitudes. The gibbons are further distinguished from other modern representatives of their family by their gregarious habits and relatively low intelligence. A second Miocene primate from southern France, that has also been traced on the causeway in Würtemberg, is *Dryopithecus*, a Simiid of variable form, which has been identified in six distinct species. This ape possessed characters intermediate between those of the gorilla and chimpanzee and almost equalled the latter in size. It was, however, in respect of dentition and jaw of more specialized type; and its face projected in a considerable snout. This external approximation to a baboon-like character was duplicated but exceeded in the larger though less powerful form known as *Oreopithecus*, which in the Miocene inhabited elevated ground in the Italian peninsula, and is paralleled in *Mesopithecus*, a much smaller Cercopithecoid form from the Balkan Peninsula. *Mesopithecus* was probably of langur stock with a bodily specialization approximating to that of the macaques, which in organization rank immediately above the baboons.

Our actual knowledge of the capacity of the Simiid stock for development is confined to the extant forms, of which the gibbon is certainly of lowest organization, and the gorilla and chimpanzees have been more fully studied than the orang-utan. There is, however, no certainty that great apes of still higher organization have not existed, but failed to survive. There have, indeed, from time to time been discovered fossilized remains of Simiids, which have been judged by experts to be divergent in the direction of Hominid type. The classic ground for such discoveries lies in the Punjab amongst the Sivalik foot-hills of the Himalayas.

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Here Pliocene beds have yielded the remains of baboons and of a Simiid, originally placed in a new genus as *Palæopithecus* but since reclassified as a chimpanzee; Miocene beds have yielded, amongst other Simiid remains, molar teeth claimed to have human resemblances. These have been attributed to *Sivapithecus*, variously described as a Hominid, as a Simiid nearly related to man, as a type allied to *Dryopithecus*. On the other hand conservative opinion has held that the teeth are those of a female orang-utan, a genus represented by later teeth found in Pliocene beds of the same hills. The most recent discovery of Simiid remains, for which a similar claim has been made, is from Taungs, Bechuanaland, on the margin of the Kalahari Desert in South Africa. These consist of the almost complete skull of an immature individual, which has been named *Australopithecus* and described as the most human-faced Simiid yet known. The conditions of this discovery gave no clear indication as to its date; conservative opinion has classified the skull as that of a four-year-old gorilla. Of the Simiid migrations of the late Miocene and early Pliocene that of the delicate and swift-moving arboreal gibbons alone appears to have been of the impulsive order. The westward movement of the equally delicate but slow-moving orang-utans from the constant climate of the Oriental Region indicates a continuous belt of tropical forest from Indo-China to the Punjab, and may be regarded rather as fortuitous. The migrations of robust forms such as *Dryopithecus* and the chimpanzee were possibly spontaneous; *Oreopithecus* displayed a preference for high ground; *Australopithecus* had superior visual efficiency and was notably wide-ranging.

The latter half of the Pliocene connects closely with the Pleistocene division of time. The northern climate became continental. Madagascar was separated from the African mainland. The southern margin of the Mediterranean rose and the equatorial forest gained on the Sahara. The northern shore, however, subsided, and the Italian plains

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fell below sea-level. There was subsidence also along the Atlantic seaboard. The Iberian landbridge probably disappeared, creating a digression of the African fauna southwards. Holland became submerged, Britain insular.

Of all primate forms those which at the close of the lower Pliocene may be assumed to have remained most plastic and least specialized were the Hominids of the Central Asiatic forest. We have seen reason to suppose that certain of these had in voluntary migration reached Britain on the north-west and America on the north-east. The latter must be assumed to have travelled slowly and without abrupt change of circumstance, gradually maturing in a form very similar to that of the modern North American Indian. Some at least passed south into California to be overwhelmed by a lava stream, which may represent contemporaneous volcanic activity in the Rocky Mountains and in Central Italy; for the Italian plains were in the upper Pliocene upheaved by eruptions which gave birth to Vesuvius and Etna. The men responsible for the East Anglian culture were shut off from Europe. They had occupied the Foxhall levels near Norwich, but were presumably later driven thence by an increasing inundation probably to succumb to the cold of the ice-foot advancing from the north. To this last troubled phase of the Pliocene may be ascribed many impulsive migrations of mammals, entailing rapid expenditure of plasticity amongst forms as yet imperfectly fixed, and the extinction of many that had already become specialized. As the forests decreased under the uplift of the central massif and the falling temperature, other Hominids of more sluggish temperament would become outliers and in proportion to the poverty of their mental equipment adjusted to plateau conditions. In the final period of augmented upheaval and increasing cold upon the plateau these men would be compelled to make an impulsive retreat southward and, in a final specialization due to rapidly changing conditions, tend to throw back to low characters which had already been expressed in the

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Simiids, but had lain dormant in their own more slowly maturing family. From the Iranian plateau two routes diverged, one passing southward towards India and Indonesia, the other westward over the Arabian landbridge to Africa. Macaques were retreating from the Punjab along both of these routes; one of these, the ancestor of *Cynopithecus*, the black ape of Celebes, travelling eastwards, took on baboon characters, possibly under the influence of the increasing cold of the Himalayan massif. The ancestor of the Hominid *Pithecanthropus* followed this route. His descendants became so nearly Simiid as almost to lose the appearance of men. Baboons travelled westwards under more constant conditions, but were in Africa directed southwards by a fall in the temperature which caused the equatorial forest to retreat from the Saharan region and to advance in the direction of the Kalahari Desert. This lowest subfamily of the Old World apes became owing to their sluggish disposition most of all inured to temperate conditions. Along this route travelled also the Simiid ancestors of the African chimpanzee and gorilla, the former, as we may suppose, from the forests of the Sivalik foot-hills, the latter perhaps directly from those of Central Asia. The Taungs skull may represent a Simiid that became an outlier when, under warmer conditions in the north, the equatorial forest again retreated towards the Sahara. The great slow-moving Simiids of Miocene Europe perished. Apart from man the sole remaining European primate is the single species of macaque which continues to haunt the Rock of Gibraltar.

The primate record of the Miocene and Pliocene goes far towards justifying a classification of forms based on the conception of variation from right type, and the recognition of the phenomena of archaic specialization as an extreme manifestation of divergence. Moreover, the total body of evidence, within which the unrecorded antecedents of man must be supposed to have had place, favours the hypotheses that plastic natures tended to attain to highest organization

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under relatively stable conditions ; and that, when this equation between constancy of circumstance and growth was disturbed, the specializations to which such forms were liable were ultimately rather the effect than the cause of inferior endowment.

4

Our knowledge of the habits of the African Simiids under native conditions is derived mainly from the reports of hunters. The chimpanzees are commonly encountered in family parties consisting of a male, a female and one or more young. The last appear to be dependent upon their mothers for about two years ; the presence of more than one of them in the family has been assumed to signify some measure of conjugal fidelity between parents. During the day the female chimpanzee carries her helpless young, as she moves, and nurses it at her breast ; at night female and young occupy a shelter of interwoven sticks and twigs constructed in the lower branches of trees, while the male mounts guard below. Adolescent chimpanzees sometimes consort together in small bands, and one authority attributes to this youthful camaraderie the occasional appearance of parties that obviously exceed the family unit. Maturity is reached at fourteen or fifteen years. Families are said to unite from time to time for social gatherings which are conducted with hooting and screaming and with drumming on logs with sticks, hands, and feet. Gorillas appear to be polygamous. Their traces have been found in the Belgian Congo at an elevation of nine thousand feet ; thence the hunters looking down into a valley observed a number of females feeding, while their babies rested on their backs. On scenting the intruders this party, in accordance with the invariable practice of the females when alarmed, disappeared and was replaced by an old male that stood on a fallen tree and glared in the direction of the enemy. He was shot through the lungs and dashing off kept on the move for two and a half hours ; he then turned and charged, running on

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his feet and right hand with his left hand extended and filling the air with piercing screams. This habitual method of progression of gorillas when attacking has been interpreted to signify that they may be left-handed. The ape received a second bullet in the chest and resumed his flight for another half-hour. He then climbed an inclined tree-trunk and was shot dead. This specimen was found to have a stature of 5 feet 8 inches and to measure 62 inches round the chest and 18 inches round the biceps. The same observers reported the bush to be cut up by gorilla-runs, which had the form of tunnels about three to four feet high, and described the attempt of a diminutive native negrilla to entice a gorilla out of the bush by the utterance of curious lip sounds. The gorillas proceed along these tracks in parties consisting of a male, three or four females and several young. Their habits are nomadic and are ordered by the supply of bamboo-shoots, wild carrots and a bark upon which they subsist. At nightfall the troop halts to sleep in holes made in the grass. The male, which has been observed to correct his young, presumably exercises a general control over the movements of his family.

Observations on the behaviour of chimpanzees within artificially arranged circumstances have been recorded in detail at the German Anthropoid Station, Tenerife. In captivity young chimpanzees are extremely active and playful and are subject to fashions in their amusements, which have been reported to include the teasing and feeding of hens, the capture of ants, a delicacy, on straws, and proceeding round in a ring. Another pastime was to paint walls, or the body, but not the face with clay. It was a favourite device both of young and of old so to arrange grass or other material around shoulders, neck or waist, as to hang down to the partial concealment of their bodies. Such decorations clearly contributed to self-esteem, and might serve as the prelude to rhythmic movements of the character of rude dancing, which their companions would accompany by drumming on the ground with the feet or

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sticks. Young chimpanzees are highly individual in temperament and ability. Of four observed females, one was assiduous, stupid and unsought in companionship ; another in ill-health, remarkable for gentleness and concern for the comfort of the others ; a third, pertinacious and inventive ; a fourth, an accomplished acrobat. Of two males one was intelligent and selfish ; another resourceful in the contrivance of implements.

Apart from the recurrent cares of parenthood the business of a chimpanzee is to secure food, an occupation in which the intelligence is fully enlisted. For this purpose sticks for reaching, for leverage and for digging, and of stones as hammers for breaking nuts are ordinary implements in the use of which practice brings refinement. But chimpanzees have difficulty in attending away from the visualization of a single situation. An implement lying beyond the scope of a single visual perception is brought into use only by a fatiguing effort of memory ; one situated in apparent attachment to an immovable background cannot be readily dissociated in thought from its surroundings. Similarly the removal of an obstacle involves a fatiguing maintenance of attention. Amongst actions of automatic performance are the surrounding of the body on occasions of suspended stimulus with a nest of leaves or grass, and the wiping of the feet with leaves when they become soiled by inadvertent treading on offensive matter. Emotion plays a great part in the mental make-up of an ape. An interruption of purpose may arouse an ungovernable and exhausting paroxysm of rage, after which he will lie exhausted ; solitude may affect him with deep melancholy in which his interest in external things is extinguished ; he may be beside himself with joy, leaping up and down and giving vent to piercing screams. The sexual behaviour of the chimpanzees at Tenerife has been found to be continent and never promiscuous. In brief, chimpanzees have displayed, when under observation within an arranged environment and undisturbed by emotion or the consciousness of being watched, considerable powers of

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concentration but a defective memory and a still more defective imagination. Their attention is easily diverted and soon wearies. Amongst circumstances contrived for them they may in youth make progress, but are likely to die before they attain to their powerful but less agile maturity. Aged individuals attract the deference of juniors but are without their fertility of resource. The relation between the Simiids and their surroundings is of the nature of an exact equipoise of demand and supply to which long habituation and the prestige attaching to experience has given permanence. They may thus be said to own much of their present and some of their past experience. But this experience is imposed by circumstances that are little subject to their modification and is limited by the increasing subjugation of their mental to their physical development.

The great apes are distinguished from man by inability to oppose the thumb to the other digits of the hand, to walk erect, to employ articulate speech, and by inferiority in the volume and convolution of the brain. Of these incapacities the first and second represent the loss of original aptitudes, for the opposition of the thumb characteristic of Lemuroids has, except where as in *Colobus* the thumb is absent or rudimentary, been retained by the Cercopithecids, and the erect progression of the gibbon has its prototype in the tarsier and amongst the Lemurids of Madagascar. All the first three deficiencies have correspondence with the last. As somewhat insecurely indicated by size and weight, the brain of the gorilla is little more than one-half as efficient as that of the least intellectual of modern savages; the chimpanzee is about one-fifth less efficient than the gorilla; the orang-utan is of rather lower efficiency than the chimpanzee. The brains of the gorilla, chimpanzee, and orang-utan resemble that of man in structural essentials. The cortex covers the lower brain, and possesses the same system of convolutions. Very few sensory impressions fail to reach the lower brain; of those that reach it most receive registration within the memory patterns of the cortex, of which the

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texture is so compact that lesion of any part of the cortical surface paralyses the sensibility of all the underlying parts. The prefrontal area of the cortex is in Simiids as compared with the other apes well nourished. Hence may derive their superior powers of directing their attention to certain impressions to the exclusion of others and less certainly of a brief suspension of conscious registration in order to recall past patterns of memory. Although there is no evidence to the effect that Simiids can detach from the concrete of past perceptions abstract determinations of time, space, size, shape, weight, texture or intensity, there is ground for assuming that they greatly exceed other apes in the scope and detail of the designs which they are capable of entertaining for the future.

The brain of man has greater substance. Not only is the lower brain more massive but the cortex has developed secondary and tertiary convolutions and the prefrontal area is proportionately greater. Moreover, the total configuration is at once more compact and more symmetrical. Certain fissures that occur on the surface of the Simiid brain are on the human cortex filled in and the posterior centre of visual perception has tended to expand in correspondence with the prefrontal area. Thus while the brain of the chimpanzee, when seen from above, may be described as almost pear-shaped, that of modern man has a high degree of anterior and posterior conformity. Modern man has a unique aptitude in dealing with abstractions, that is to say, of liberating and recombining formal elements from the total material interwoven in patterns whether of memory or of imagination. Not only, therefore, may new experience be built up without excitation from without, but a mathematician in seeking the solution of a problem can proceed from the memory of formal elements that he has previously imagined. Simiid is then inferior to human mentality first in discrimination between impressions; second and more greatly in the diversity of the memory patterns that are successive differentiations of the function of the cortex;

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third and more greatly still in voluntary power to recall a past pattern of memory and by the selective recombination of its elements to construct a pattern of imagination to which future action may conform ; fourth and totally in ability to create within the imaginative order new experience, of which the reality is wholly independent of muscular expression.

Viewed thus the fragmentary opening of the human record ceases to be enigmatical. Its discrepancies of time and place indeed remain, but they become insignificant when compared with far greater discrepancies of time and place within the wider horizon of the primate succession. There, indeed, time is so vast as to be capable of statement only in geological terms and space presents bewildering vicissitudes of continuity and interruption. To the zoologist time and place are instrumental to exact inference only as subservient to a more logical construction, much as a mathematician may be assisted to generalizations through the plotting of a succession of points on squared paper. Historical explanation depends less upon the orders of time and place than on the exposition of the uniformities, which these orders serve to map.

CHAPTER III

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I

THE superior complication of the human brain invests the behaviour of man with an efficiency that is lacking in the behaviour of other animals. The totality of his past serves him for equilibrium. But his experience is so little dominated by impressions of any one order that individuals rely in different proportions and on different occasions on visual, auditory and motor memories, and the blind and deaf display remarkable powers of compensation. Man's abilities for varied reaction whether emotional or muscular are coextensive with his range in registration. Human love has in intensity and direction a wider compass than the sexual passion of animals, embracing in marriage, parenthood and friendship sympathetic relations that tend in their ultimate expansion to give solidarity to all human experience. Manual dexterity, erect progression and articulate speech are made up of muscular co-ordinations, that are distinctively human. To the first may be traced all human industry, to the second all human travel, to the third all communication of ideas.

The most distinctive of human capacities is that of imagination, which is characteristically independent of muscular exertion, so that a man is free to elaborate constructions of thought, of which an animal, prone to translate its imaginations into immediate bodily activity, is incapable. In its sympathetic manifestations imagination may be designated humour; in its cognitive activity it is often termed wit.

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In affairs a man of sound judgment is one capable of a true estimate of the motives and intentions of others. It is the difficult task of a poet to translate into an appropriate pattern of words a vision hid from less imaginative minds. In virtue of his imagination a man can discern values and order them in accordance with intellectual, moral and æsthetic standards, which his judgment has set up. He may thus exercise a wide control over his own future. The operation of these abilities of registration, selective response and imagination, which distinguish man from other animals, is manifested in a unique mastery over circumstance, that is termed culture.

Since culture is an expression of mentality and mental activity takes place within the brain, there can be no culture that is not of individual origin and does not remain in individual possession. On the other hand, individuals have not achieved mastery over circumstance in isolation. To conceive of such a possibility is to exclude from experience all human sympathy and all human ambition. In living his own life the individual has most assistance, but also most opposition, to anticipate from other men. To them he is attracted sympathetically because they are of his own kind, sharing his emotions and experiencing similar needs ; thus arises on the human plane a community of interest that receives cultural expression in social organization, industry, language, beliefs, science and art. By them again he may be repelled, because human nature embraces a variety of expression as manifold as the variety of individual purposes, values and standards. In a low level of culture, when needs are urgent, the means of satisfying them few and forethought of small range, man is disposed to anticipate opposition rather than assistance. Thus arise small groups of men united in one common interest, isolated by distrust of those of other antecedents, and even of those amongst their own companions who are credited with unusual experiences.

Since the primitive group avoids contact beyond its own pale, it gradually establishes a dialect which is not current

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amongst other men. Shut off from adventurous speculation upon the substantial concerns of life, the individual imagination can traffick only with shadows. It requires an exceptional mentality to translate ideas thus acquired into a form adapted to popular assimilation, for they must be disguised in some garment of convention. It is, however, to such poetry that the slow increments of primitive culture are to be attributed. It follows that ideas, symbols and objects of mystical import acquire between groups an earlier currency than the products of utilitarian ingenuity.

Within the social economy of a primitive group are contained the expedients whereby its sustenance and continuity are secured. This procedure is jealously guarded by custom. Practical expedients for the further utilization of natural resources and for the redistribution of social services emerge only as the isolated groups begin, through increase of assurance or under external pressure, to associate into larger entities. Thus in matters affecting the common interest the assimilative power of a primitive group is normally low. Since its cohesion is founded on the surrender of individual freedom, its power of origination is lower still. Similarities of social procedure or of industrial technique are to be ascribed rather to common origin than to parallel invention. Failing any probability of such contact in the past, it is economical to suppose transmission to have arisen rather through the intrusion of superior strangers than through the intellectual activity of separatist communities. In such borrowings the acquisition must take its place in the complex of values entertained by the assimilating society; it may retain little of the character which it had in the group of origin. It enters into the work of other minds, moulded in another tradition and confronting other circumstances. Short of this recognition of this situation the historian is at fault, for he is unable to bring his facts within the human reference.

The poverty of the East Anglian evidence from Foxhall arises primarily from the complete absence of skeletal

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remains. We can at most say of the situation that the habitation levels belong to a late phase of the Pliocene, when coastal subsidence was gradually inundating the low shores of eastern Britain, and before the catastrophe of the first Pleistocene glaciation, known as Günz. We can infer that East Anglian man had been long exposed to a slow deterioration of climate, but cannot say to what extent this change had altered his physical type and mental competence, still less that it had been productive of archaic specialization. We may safely assume, however, that fall of temperature and reduction of territory, impoverishing the flora and disturbing game, had modified his food supply. The information afforded by the habitation levels is not, however, merely confined to the cultural order; it belongs to the utilitarian part of culture and to the use solely of fire and flint in a single and unprosperous stage of existence. It is probable that East Anglian man also made use of other materials; we are without any data whence we may form an estimate as to his imaginative efficiency.

The remains of *Eoanthropus*, discovered at Piltdown on the border of Ashdown Forest, Sussex, are both skeletal and cultural, and supply in each case ground for inference as to antecedent experience. The geological evidence indicates an interglacial phase, though whether the first, which succeeded Günz, or the second, which succeeded the Mindel glaciation, is uncertain. On the latter view the remains may be about 250,000 years old or about one-half as ancient as those of *Pithecanthropus*. The relics consist of fragments of a brain-case and of a jaw, some flaked flints and a large bone implement fashioned from the thigh-bone of a great elephant. The bone implement is significant. Its material implies co-operation in dismembering the great carcase, its workmanship acquaintance with a technique appropriate to the manufacture of implements of wood. It had been bored with a flint tool; analogy suggests that this perforation was intended either for the reception of a cord of sinew or fibre, to fit the implement for use in the

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scaring and driving of game, or for leverage in the straightening of shafts. Such an implement might well be credited with possessing magical virtue. The flint flakes, though of a sequence known in European archæology as lower palæolithic, may at Piltdown be graded as utilitarian and, therefore, of minor importance. The physical type of *Eoanthropus* has been characterized as anomalous. The specialization of the jaw is so archaic as to be almost identical with that of the fighting jaw of the chimpanzee, and is indeed more aberrant from human form than that of *Pithecanthropus*. The head form, however, with which this surprisingly simian feature has been successfully collated, is almost modern, and the brain case, though of low elevation, indicates a considerable mental superiority. Its total capacity is about one-ninth greater than that of the Javan specimen, the powers of sensory discrimination and of articulate speech are more highly developed. The ponderous jaw has somehow failed to be balanced by flattening of the sides of the skull, by obliquity of the forehead and by heavy brow-ridges. This phenomenon seems to signify arrest in the process of specialization. Within the primate order rounded head form is primitive and the acquisition of a fighting jaw an early plateau specialization. Within the Hominid family the fighting jaw ranks as an archaic accommodation to circumstance and symmetrical growth especially of the brain as an assertion of natural purpose. The head form of *Eoanthropus* may perhaps be explained as indicating in Piltdown man's ancestry an early resort to a plateau habitat, when the stock was highly plastic, succeeded by a resumption of a forest habitat, where manipulative skill was acquired, and in application to the manufacture and use of implements supplanted defensive specialization. If so, *Eoanthropus* provides an illustration of the prepotence in man of mental over physical development.

The fossilized human jaw discovered in the Mauer sands, a mid-Pleistocene formation near Heidelberg, is of less

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severe specialization than that of *Eoanthropus*, for it is not of the defensive type adapted to fighting, and it approximates to the dentition of *Neandertalensis*, the least archaic of the non-modern forms of man. Its date is uncertain. If recent authorities be correct in discrediting the third or Riss glaciation, it belongs to a very long interglacial phase extending for over 300,000 years between Mindel and the last Pleistocene glaciation which is known as Würm. If this vast period be divided by the recognition of Riss, the zoological evidence derived from neighbouring deposits is in favour of ascribing the Mauer remains rather to the second and longer than to the third and shorter of the interglacial phases. In either case, *Heidelbergensis* is by all authorities regarded as a form greatly divergent from *Eoanthropus*, and is by most assumed to be both later and inferior in mental efficiency. *Heidelbergensis* is more closely allied to the collateral and less severely specialized African form *Rhodesiensis*. The ancestors of *Rhodesiensis* and of *Heidelbergensis* may have entered Africa across the Arabian landbridge with an approximately equal residuum of plasticity and have subsequently encountered circumstances that imposed upon them distinct modifications. In the complete absence of cultural remains the determination of the historical significance of these two forms is dependent on the possibility of assigning to them places otherwise vacant in some comprehensive hypothesis.

2

Neandertalensis is named after the Neanderthal valley, near Düsseldorf, in north-western Germany, which is the station of first recognition of his physical type. The culture with which he is most securely associated is named Mousterian from Moustier, in the Vézère valley of the French department of Dordogne, where it was first noted. The period during which Neanderthal man is known to have possessed the Mousterian culture in Europe, is that of

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the Würm glaciation, of which the duration can at a conservative estimate scarcely be reduced to less than 25,000 years, and exceeds the entire post-glacial period that followed it. Neanderthal man was, however, but one and not the most successful variety of *Neandertalensis*; the Neanderthal valley was but one and not the most central habitat of Neanderthal man; our knowledge of the Mousterian culture is far from comprised within the remains discovered at Moustier. While *Neandertalensis* certainly made a home within the European area affected by the Würm glaciation, it is certain that this was neither his original nor his most prosperous home and that his antecedent history had been long and various. Least of all are we justified in limiting the culture of *Neandertalensis* to the middle palæolithic technique of flint fracture, which is in a narrow archæological sense designated Mousterian.

The physical proportions of *Neandertalensis* are well known from remains discovered in the grottos and rock-shelters of southern France. This evidence has sufficed for the recognition of a central or Neanderthal type, distinguished by a long depressed skull, which during the Würm glaciation was congregated in the sheltered valleys of rivers emptying into the Gironde estuary. Capital importance attaches to the almost complete skeleton of a man from fifty-five to sixty years of age, who had been buried in a cave at La Chapelle-aux-Saints, Corrèze. The total combination of characters, partly parallel with those of higher apes and partly divergent, is so entirely without example in modern man, as known to us in the present or in the past, and is so fully stereotyped by the rigidity of the skeleton and musculature, that the possibility of *Sapiens* having descended from *Neandertalensis* may in the present state of our knowledge be dismissed as untenable.

In the constant Neanderthal type this fixation was apparently complete. Around that type may be grouped various racial variations, of which two also inhabited lands adjoining the Atlantic Ocean. The early Mousterian

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skeleton of a youth, some sixteen years of age, who was buried in a rock-shelter close to the cultural station at Moustier, with a flint implement of unusual perfection, is distinguished by less than average development of Neanderthal type. The late Mousterian remains of a man discovered at Spy, Belgium, greatly exceed Neanderthal man in refinement, and the skull indicates a superior complexity of brain. On the other hand, the undated female skull discovered in Forbes Quarry, Gibraltar, beyond the area affected by the Würm glaciation, falls below Neanderthal standard, both in severity of specialization and in cerebral development. We may well hesitate to suppose that the catastrophe of the Würm glaciation, to which Neanderthal man succumbed, could have admitted of a physical progress, whereby Neanderthal man evolved from the Gibraltar race and himself became ancestral to the superior race of Spy. In what manner these races may be regarded as related to each other needs to be investigated within a wider horizon beyond the limits of the Atlantic sea-board and the period of the Würm glaciation.

The severity of Würm was accentuated by its division into two phases of culmination separated by a partial recession of the ice-fields, which is known as the Laufen oscillation. Although the areas of devastation were less extensive than in the second and first glaciations the climate of Europe became extremely cold, for it either dispelled or extinguished a warm temperate fauna, that had on the Atlantic sea-board been continuous since Mindel. The zoological evidence for the recognition of the preceding Riss glaciation amounts chiefly to the intrusion into the German plain and the Alpine borderlands of sub-Arctic species, which included the reindeer and the woolly rhinoceros, the latter a form indigenous to the Asiatic tundra. It may therefore be assumed that while there was, during the hundreds of millenia which separated Mindel from Würm, access to Europe from Asia Minor across the Bosphorus and from Africa across the Italian and Iberian landbridges,

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passage between East and West Europe was for a long period closed. We may thus picture the population of Europe between Mindel and Würm as consisting of various stocks. Foresters from Asia Minor and hunters from Africa may have met both before and after the climatic deterioration of the northern plain. But the cold interval was critical and divided Europe into two regions of human occupation, the one towards the south-east with a population composed mainly of foresters, the other towards the south-west tenanted almost exclusively by hunters. In the warm temperate phase in which the whole period terminated, North Europe received a great accession of game from the south and west, followed as it may be supposed by a further influx of hunters from Africa, whom the impetus of migration may well have carried beyond the territory of their predecessors. On this varied population descended the crisis of the Würm glaciation, which, as it became established, reversed the previous climatic cycle and extended the former area of devastation. The foresters retreated towards the Danube, the hunters left the barren lands forsaken by steppe game and were held up in France by the Pyrenees. In the Laufen oscillation interglacial changes of climate were doubtless in some measure repeated. Summers became warmer and longer, evaporation exceeded precipitation, forests were restored, and the life of man in Europe became for centuries more bearable. But the division of population was probably unbroken. The northern plain was traversed by unfordable rivers, which had become torrential in the task of carrying off the outpourings of the melted snow and ice. The magnificent fauna of the great interglacial phase did not return, and there was little to tempt the hunters eastwards. On the other hand, the thaw bit into the northern edge of the Alpine glacier, where the shores of Lake Constance and the adjoining cantons of St. Gall and Appenzell became habitable. After this respite, with an accompaniment of dense mists, heavy rain and snowfall, the Würm rose to glaciation its second peak, the ice-fields extended

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again to their former limits, and the western hunters apparently perished.

Implements in stone which are definitely of Mousterian type have been discovered outside Europe in North Africa, the Nile Valley, Syria and Asia Minor, and also, though these may be of later type, in China. They are in all these regions, except China, preceded by two antecedent techniques, the Acheulean, so named from its identification at St. Acheul, in the valley of the Somme near Amiens, and the Chellean, identified at Chelles in the valley of the Marne near Paris. These earlier forms exceed Mousterian implements in width of distribution, for they have been found also in the Congo basin ; in South Africa ; in Mesopotamia ; in India ; in the valleys of the Indus and Ganges, and near Madras in the Nilgiri Hills ; in Indo-China and Japan. Along these routes have also been found other and ruder human tools, which when they display obvious signs of human manufacture, either from flint-cores or their detached flakes, are comprehensively termed pre-Chellean, and when their shape may be assumed to be due to natural causes hardly less comprehensively coliths. Taken as a whole this evidence appears to indicate successive dispersions of flint-using hunters from some Asiatic habitat under such pressure as may be attributed to climatic change, to increase of population and to the restriction of territory by the encroachment of the glaciers of the Pamirs and of their supporting ranges.

It is not beyond justifiable conjecture to suppose that the men who used these tools were of a stock that had forsaken the forest to become, in habituation to life in the open and a carnivorous diet, specialized in a heavy-browed and long-headed plateau type. Such a stock if established in northern Mesopotamia was likely in its migration to follow the riverine routes that lay along the valleys of the Euphrates and Tigris on the east and the Orontes and Jordan on the west. The former may have led to the Punjab, Deccan, Assam, Indo-China, China and Japan. The latter led to Africa, where it divided, going southwards up the Nile

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Valley or westwards along the Mediterranean sea-board. In the latter direction it was closed to the south by the equatorial forest, until in Marocco it gave access southwards along the Atlantic sea-board to the Gold Coast and northwards across the Iberian landbridge to Europe. It is, moreover, reasonable to suppose that progress in the technique of flint fracture would be most continuous in the homeland and that emigrants would successively depart equipped with various stages of a slowly developing industry. Early and very plastic emigrants, such as the ancestors of *Rhodesiensis* and *Heidelbergensis*, may perhaps be credited with a low level of pre-Chellean technique represented by the simple modification of detached flakes and with little ability to improve on these. The severity of specialization to which they were physically prone and the extent of their wanderings set bounds to their further progress. Even the comparatively mature stock of *Sapiens* appears to have reached the termini of its early migrations with a proficiency in handicraft inferior to that with which it had set forth. Lacking an appropriate implement, with an intermittent supply of suitable material and no facilities of transport it was inevitable that a migrating people should fall back on the use of improvised tools. An unbroken stone would serve as a hammer. Under the expectation that his implement was to be abandoned a workman would hardly impart to it the best finish of which he was capable. Thus the discovery in the same centre of implements of various degrees of elaboration need occasion no surprise. An industry is to be dated by its best productions and not by lower forms, which may be the survivals of a less expert technique. It was feasible for the Chellean industry to be imported into the Indus Valley along with the Acheulean, the Acheulean into the valley of the Nile along with the Mousterian. The least acceptable explanation is that men irrespective of antecedents or of contact should have made similar inventions on the periphery of a curve connecting Britain with the Gold Coast, Natal, Madras and Japan.

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The European evidence for industrial sequence in the fracture of flint is very explicit. Eoliths of the class of those authenticated at Foxhall as of human fracture are typically Pliocene. They occur either within Pliocene formations such as the Red Crag of East Anglia or on plateaux such as the North Downs of Kent, where they were deposited before the rivers cut their present valleys. Pre-Chellean implements are of two classes, both of which are found in river-drift, that is to say in sand, gravel or other deposits brought down by rivers in the process of cutting their present valleys. They have been discovered in association with the osseous remains of a very early Pleistocene fauna, and are thus dated back certainly to the second and possibly to the first interglacial period. Of the two classes one consists of flint-flakes detached from the matrix, or core, and worked on one side only. Implements of this class have been reported in rude forms from North Europe, east of the Rhine, where the Chellean industry has not been traced and whither it is possible that they were brought by the ancestors of Heidelbergensis. Within the same class may be placed the flint implements discovered at Piltdown in association with *Eoanthropus*, who may have acquired the art of trimming flakes in passage through North Europe. The second class may well have been of later arrival. It failed to penetrate the northern plain, but extends from south to north along the Atlantic sea-board. It is known as Strepyan after Strépy in Belgium, where it was first recognized. To this class belong implements consisting of flint-cores worked on both sides and distinguishable from early Chellean forms chiefly by their ruder workmanship and by the colour of the crust, or patina, remaining on the untrimmed surface.

The coup de poing, which is the characteristic form of Chellean implement, belongs in Europe to a later period of the interglacial phase that preceded Würm. It consists of a core of flint roughly sharpened by the striking off of flakes from both sides with blows from a hammer; the edge thus formed is of irregular line. Chellean specimens are char-

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acteristically thick ; they are rarely of less than four inches in length and may attain to a length of ten inches and a weight of one pound. In use the coup de poing was grasped in the palm of the hand and served as a universal tool for cutting, flaying, sawing and scraping. It was doubtless to facilitate these operations that the unsharpened end was either rounded off or left untrimmed ; but it was clearly the implement of a great-handed and powerful race, for a man of average European proportions could hardly have made effective use of the larger specimens.

The Acheulean culture is in all respects of higher grade than the Chellean. It expresses under similar climatic conditions a clearer consciousness of individual needs, a more detailed analysis of circumstance and a greater efficiency in the appropriate exploitation of available material. It is at its best characterized by the observance of economies of time, labour and material, that may without exaggeration be described as artistic. The total distribution of Acheulean workmanship in stone is incompatible with the supposition that the northern plain, which is the region of its European emergence, was the home of its origin. The local evidence indicates a spontaneous migration from Africa towards the close of the pre-Würmian interglaciation, followed by an enforced, though by no means precipitate, retreat towards the Atlantic sea-board, as the plain became waterlogged and the hunting in northern latitudes less remunerative.

The first trace of the arrival of men of superior imagination in Europe is the appearance in later terraces of the same river-drift, and in association with the same interglacial fauna, of coups de poing with a greater regularity of edge and trimmed over the whole surface with disregard to convenience of hand grasp. The conclusion that these must from the first have been intended for hafting is supported by the discovery in an Acheulean level in south-eastern Britain of an ancient wooden spear, and by the presence in the Acheulean equipment of straight-edged tools which may have served

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as chisels. Moreover, the sequence of forms imposed by Acheulean workmen on the *coup de poing* indicates departure from the use of implements of general utility, and the adoption of numerous forms designed for special processes. These immigrants may be supposed to have penetrated to North Europe light-handed, with an equipment rather of experience than of possessions, and prepared to experiment within their novel surroundings. They had probably left behind them in France the main pastures of African species of game, and found the meadow and forest forms of the north already prone to seasonal migrations eastwards in the lengthening winters. They had, therefore, occasion to acquire a certain efficiency in woodcraft and to practise economy in the use of flint. They had also need for scrapers and borers, the former for cleansing and suppling, the latter for piercing hides to be fastened together with sinews for winter clothing. It is at least certain that the Acheuleans, arrived within an area to which the Strepyan technique had never penetrated, relied greatly on the utilization of flint flakes and not improbable that they converted to their own use pre-Chellean implements that they discovered in the neighbourhood of quarries.

Meanwhile they were far from neglecting the development of the *coup de poing*. Indeed, the two techniques like the two classes of implements were perfected in close association. For the manufacture of flake implements the Acheulean workman having selected a suitable flint nodule proceeded to prepare it by lateral flaking and then struck off a large basal flake. Round the flat surface of this base he next, with hammer and stone chisel, delivered a series of blows that detached thin blade-like flakes, of which the sections tended to terminate in beaked ends, concave at the base, convex at the opposite end. He had thus at his disposal the basal flake which was serviceable as a scraper, and the blades to convert into knives. These flakes he retouched, that is to say, provided with an edge by secondary flaking. Practice on these smaller forms reacted on the technique

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of the coup de poing, which was reduced in thickness by secondary flaking, provided with a straighter edge, converted to a spiral form by the working of the two edges in opposite planes, and shaped successively as an oval, a lozenge and a triangle. In the last form it was well suited to serve as an axe-blade.

As the Würm glaciation became established the northern hunters left the cold and marshy plains for the well-stocked plateaux of France, inhabiting first open camps in river valleys, later, at least in winter and possibly to avoid seasonal migrations of the formidable musk-ox, woolly rhinoceros and woolly mammoth, rock shelters in the Dordogne district, where flint was plentiful. Here they may be assumed to have associated with a sessile population, that still retained the unprogressive Chellean culture. A period of transition is distinguished by the local appearance of the Levallois flake, which is in Europe intermediate between Acheulean and Mousterian. For the production of this form the Acheulean workman was at pains first to reduce a flint nodule to a pre-Chellean form of the non-Strepyan class, which since it was domed with a longitudinal keel and convex anterior beak, is described as rostro-carinate. It is possible that the originator of this form had first experimented successfully on some ancient tool discovered in the north, and subsequently worked from similar forms of his own manufacture. Having trimmed the basal edge, he then with a stone hammer struck on the side of the nodule a single perpendicular blow, thereby splitting it and raising a large bulb of percussion. He thus secured an implement in some instances over eight inches in length, and already worked upon a single side. Satisfied with his final product the workman refrained from unnecessary labour on the side of cleavage, which was left unmodified except for the occasional chipping of the bulb of percussion to give better finger-hold. His attention was possibly directed to the utilization of the remaining material. The dexterity demanded in the manufacture of the Levallois flake was not

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easily achieved. We may suppose that it was attained not without emulation, and that some measure of prestige may have been enjoyed by the superior expert. Precision in the delivery of the final blow belongs to the Mousterian rather than to the Acheulean period of culture. During the early Mousterian period in France coups de poing were still manufactured, which rivalled the best specimens of Acheulean workmanship; but the most characteristic Mousterian implements are derived from the less artistic processes of Acheulean manufacture, and include a spear-shaped point, of which one form with lateral notching is strongly suggestive of hafting, and a broad scraper well adapted to finger-hold, that like the Levallois flake was detached from a prepared core by a single blow.

It is not easy to suppose either that the Mousterian culture of Europe evolved in independence of the same technique in Syria and Africa, or that it penetrated from these centres in face of the Würm glaciation and of the southward retreat of game. It seems, therefore, possible that it was resumed by the men who, as pioneers, had made experimental appropriations of pre-Chellean industry in the northern plain and of woodcraft in the central forest, when they fell back to Central France and had cause to resort to a more utilitarian technique. The situation in France made such a resumption natural. On the one hand the glaciation restricted the range of individual experience, on the other hand, the bulk of the Würmian population, with whom the northerners became associated, may be assumed to have been of the inactive Neanderthal type.

Stratigraphical method has thus established in Europe the sequence of pre-Chellean, Chellean, Acheulean and Mousterian techniques. These archaeology has with the assistance of zoological evidence roughly dated, logically connected and accurately described. The explanation of the sequence is, however, to be sought through the consideration of the mental efficiencies of which the successive forms were the expression. The cultural evidence points to

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an inferior race in possession of Chellean and a superior race in the possession of Acheulean culture. The Würmian glaciation may have invested the more imaginative people with a prestige that fitted them to become instructors of the more backward. But the European evidence is reticent as to the antecedents and affinity of these races. Fortunately another chain of evidence is available for their classification.

3

The term Neanderthaloid may be used comprehensively to include varieties of *Neandertalensis* which display any considerable divergence from the central Neanderthal type. Within this wide class are to be placed the remains found at Gibraltar ; at Spy ; at La Cotte de St. Brelade, Jersey ; at Taubach and Ehringsdorf in the Ilm Valley, Thuringia ; at Krapina in northern Croatia ; and in the Wadi el 'Amud ravine of the Tiberias district of Palestine. The Thuringian remains are on all the evidence the oldest. They belong to the river-drift period of habitation in the open, and are associated with a warm temperate fauna and with pre-Chellean flint implements. An almost complete lower jaw from Ehringsdorf departs in four well-defined features from Neanderthal type, and in one of these approximates to Heidelberg man. The situation of these remains in a mountainous area to the south of the German plain and to the east of the Rhine is suggestive rather of entry from the east than from the west. Thirteen teeth from St. Brelade are of approximately the same date as the superior Spy remains. They are associated with the bones of the glacial fauna and with late Mousterian implements manufactured out of non-local flint. The condition of the teeth is abnormal. The crowns are reduced in size and furnished with exceptionally massive roots, as though weak musculature had necessitated a lateral movement of jaw in chewing hard and unaccustomed food. Such a predicament was likely to fall on foresters during a glaciation ; but

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the data are too meagre for racial classification. The three remaining types though variously divergent from Neanderthal man, are all known to have been distinguished by the torus and fossa formation of the brows, which is the most obvious character for the identification of *Neandertalensis*. Of these the Gibraltar skull is certainly the most archaic. Whatever be its actual date it can hardly fail to represent a rapid specialization at a comparatively early stage in the development of the stock. The small rounded head with its uncapacious brain-case and simple brain are characteristics from which Neanderthal man is divergent, but which Galilee and Krapina variously confirm as original traits. It may be supposed that they were fixed by premature thickening of bone.

The Galilee remains consisted of a broken skull of which the fragments rested in a shallow pocket of the floor of a cave, where they were protected by two large blocks of rock. With these remains were associated flint implements of superior workmanship and transitional between the Acheulean and Mousterian techniques. The condition of the floor, which contained great masses of a very hard conglomerate, suggests that these implements date from a climate which was followed by a sudden fall of temperature. It may be, therefore, that they belong to an interglacial period; if so, they are to be accounted much older than the remains discovered at Spy. The skull, which is that of a young woman, had in the region of the forehead three circular depressions, which had long healed and may have been induced by such scraping operations of the character of trephining, as were performed by neolithic surgeons who entered Europe from Asia Minor in the fourth millenium B.C. The head form was long and exceptionally narrow and high vaulted, with a brain capacity about equal to that of a modern European, and approximates more nearly to *Sapiens* type than that of any other known Neanderthaloid. The convolutions of the cortex were, however, small and simple, and of a pattern similar to that of the Gibraltar

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female. The Galilee skull goes far towards establishing a Mesopotamian homeland for the evolution of the Mousterian technique.

The Krapina remains consist of the disarticulated, broken and charred bones of from ten to fourteen individuals of all ages, that had been deposited in a rock shelter. With these were associated the bones of the warm interglacial fauna and implements of stone worked in Acheulean or early Mousterian forms not only in flint but also in quartz, jasper and chalcedony pebbles. There are further indications of the use of a forest equipment in bone which include an axe and a borer. The fracture of the bones, which was in this case beyond doubt intentional, rendered the reassembly of parts of the Krapina skeletons a task of great difficulty, but it is now known that the head form departs from all other Neanderthal types in being short, broad and low vaulted, and that the limbs exceeded all other examples of *Neanderthalensis* in their approximation to *Sapiens* type. The skull has closest affinity to that of the Galilee female. The teeth provided examples of the fusion and even of the absorption of the roots of the molars; those of one jaw have been diagnosed as affected with three distinct forms of dental disease. The disorder of the remains may be conservatively explained on the hypothesis that the rock shelter was a place of disposal for the dead, which fear of ghosts caused their fellows to dismember and in part to burn. It is possible that the fracture of the Galilee skull had also been intentional.

The use of bone, which entered little into the economy of the Neanderthal men of lower and middle Mousterian levels, attained great development in the isolated district of Lake Constance to the south of the Thuringian Forest, where the canton of St. Gall contains the cave station of Drachenloch, that of Appenzell, in the Santis Mountains, the cave of Wild Kirchli at a height exceeding 4,500 feet above sea-level. The date of these stations is uncertain, for the fauna is indistinctive and the implements in stone are atypical. It has, however, been generally assumed that man

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gained a footing in these Alpine retreats during the Laufen oscillation, when this part of Switzerland probably became free of ice. There is little reason to suppose that the settlement was made from the west. On the resumption of a less rigorous climate the population of France would be more likely to revert to a life in the open, frequenting river valleys and plateaux, than to follow the retreat of the ice within a region to which perhaps they had never previously penetrated, and there to adopt the unwonted life of mountaineers, to which they were physically ill-adapted. Drachenloch was the centre of a prosperous industry, which converted the teeth and bones of the cave bear to use as implements for boring, scraping and flaying, and as vessels to hold liquid. These products were fashioned in such numbers and so methodically stored as almost to convey an impression of trade. But a more conservative explanation may be that Drachenloch was a place where work proceeded in the winter and that the loftier station of Wild Kirchli served as a summer resort, whither the implements fashioned at Drachenloch were seasonally transported.

A working hypothesis to cover the main facts in our possession for tracing the genealogy of *Neandertalensis* may then start with the postulate of a small-headed, heavy-browed stock of rounded cranium and forest habit, which during the approach of the first Pleistocene glaciation was in retreat before the advance of men of superior mentality. The line of retreat lay westwards across the Armenian highland to Asia Minor. Of this immature stock one branch gaining an asylum in the forested region to the north-west of the peninsula there became fixed in the original round-headed type, and entered Europe across the Dardanelles; a second diverging south into Mesopotamia became hunters; a third became established in the Syrian highland. The typical examples of races that correspond with these three experiences are the Krapina, Gibraltar, and Galilee types. With Krapina man it is possible that we should classify the remains discovered in Thuringia and at St. Brelade,

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assuming that the former preceded Krapina man in entry into Europe. The Krapina remains are presumably in date earlier than those at Drachenloch ; but the bone industry indicates the higher culture, and was possibly that of the superior race before whose advance the Krapina Neanderthaloids had retreated from Asia Minor. Both the bone culture of Drachenloch and the bone and pebble culture of Krapina are pre-neolithic and stand apart from the palæolithic series. The acquisition by the Krapina race of Acheulean and Mousterian technique may perhaps be ascribed to contact with the energetic stock that in a spontaneous migration from the west advanced with Acheulean equipment beyond the Rhine ; it may have been from the Krapina race that these intruders acquired woodcraft and a restricted use of bone. The Alpine glaciation of Würm was likely to divide the foresters of Europe ; the Krapina race may have retired eastwards while the men of St. Brelade advanced through northern France ; both may be assumed to have suffered severely through an enforced change of food staple.

It is then to the northern arc of the Mesopotamian region that we may look for the evolution of palæolithic technique from Strepyan to Mousterian, which is connected chiefly through the various phases in manufacture of the coup de poing. It is possible that in respect of these techniques the whole area was culturally united, and to be assumed that emigrants would be exposed to specialization in proportion to the earliness of their departure and the continuity of their wanderings. The evidence points to the Gibraltar race having set out before the Neanderthals, carrying with it the Strepyan coup de poing through Africa, Spain, and France to Belgium. The great-headed, great-handed and heavy-bodied Neanderthal race with its long head, capacious brain-case and sluggish and sessile disposition is likely to have developed under constant conditions on the plain prolonged over a lengthy period. This race may have entered Europe with the Chellean culture. Galilee man

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whose remains are probably later may represent a mountain type. His superior head form indicates a more sheltered existence than that of the plain, but a carnivorous rather than a vegetarian diet. Whatever be the explanation of the skull wounds from which the Galilee woman so successfully recovered it is at least safe to say that they were not self-inflicted. If they were actually the marks of a surgical operation, the dexterity involved is difficult to ascribe to a brain of a complication hardly superior to that of the Gibraltar race. It is conceivable that this individual had been the subject of experiment by some more imaginative mind connected with the race whose culture is represented at Drachenloch.

We have left the question of the identity of the adventurous and inventive race that carried the Chellean and Acheulean cultures as far as Natal and Japan and produced Mousterian forms in China and in the valley of the Nile. The Gibraltar race can be dismissed as too feeble, the Krapina race as too distinctively of forest type, the Neanderthal race as too little active. Galilee man in spite of his physical superiority had a relatively primitive brain. Moreover, all these races appear localized in sheltered surroundings. The race of palæolithic travellers appears to have been on the other hand very mobile, curiously indifferent to climate and capable of making good under extremely diverse conditions. The plateau of Anatolia at the continental base of Asia Minor was in subsequent history the homeland of an energetic and versatile race of modern man, that was of superior physique to the round-headed foresters to which it was nearly akin. Here perhaps, in contact both with the forest and mountain culture to the west and the plain culture to the south, the Neanderthaloid travellers may have matured until evicted by the powerful Anatolians, who later entered into possession of the Syrian highland. A retreat of such Neanderthaloids, though at first impulsive, was likely to develop into a spontaneous migration and to attain to considerable independence in the choice of routes

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and in experimental adaptations of culture. To such emigrants may perhaps be attributed the Mousterian technique with a tendency to fall back on earlier forms either Acheulean, when prosperity quickened imagination, or Chellean, when transit was rapid or circumstance adverse ; in settlement the utilitarian forms of the Mousterian might tend to re-emerge. Of all Neanderthaloid remains those mentally and physically most equal to this effort have been discovered at Spy, both almost at the terminus of retreat from the North European plain and of human habitation in the great glacial period to which they belong.

4

When under deteriorating conditions the Acheuleans relinquished the pursuit of forest and meadow species of game on the northern plain, they fell back for sustenance on the light horses and bison from the Asiatic steppe, which still thronged the plateaux of France. Life in the open by day, and by night occupation of wattle and pit shelters in the river valleys, was possible only during the shortening summers. At this period of the year they still visited the flint-bearing terraces of the Somme and the Marne, the men manufacturing tools and hunting while the women built shelters and scraped hides. But as the lengthening winters set in with constantly increasing severity they retreated south with the thinning remnants of the steppe fauna and found protection under rock shelters, and in grottos and the fronts of caves. Their favourite quarry was the horse, when this withdrew they continued to hunt bison. When bison in turn became scarce there was no alternative but, under conditions which became increasingly precarious, to await the coming southward of the reindeer. To the depressed period of the first culmination of Würm belongs the technique known as the lower cold Mousterian, which was apt in expedient and economical in material. The population of the Gironde district had cause to reconstruct their values

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and by slow degrees establish a new social organization, in which Acheulean influence preponderated. The northerners could hardly fail to attain prestige, for they were superior craftsmen, had experience in the conversion of pelts into clothing, and may even be credited with a lore of fables concerning a former life of adventurous travel. They possibly introduced the beginning of a ritual for the disposal of the dead. It is not surprising that the next industrial phase known as the middle cold Mousterian lost ground in technique. The present was full of risk; famine became familiar, evil beasts contested possession of the poor shelters; imagination had little new experience to reconstruct. In bad winters the caves seeped with moisture, spoiling fuel and the dried meat that adversity had taught the Neanderthal hunters to store. As bad winters gave place to worse the hunters became more cave-bound and pinched between external frost and internal damp. It is hardly conceivable that such unnatural conditions should not have acted with deteriorating effect on a stock specialized for the life of the hunter and possessed of little margin for modification to conditions that were other than warm and temperate. During a confinement continued for many thousands of years the population of France became increasingly inbred to the more numerous Neanderthal type with a continual loss of stamina, but not necessarily to the entire suppression of Acheulean temperament. Cultural progress may have continued in the directions of linguistic aptitude and amelioration of social relations even after stamina and technical skill had seriously declined. Men would not be silent as they squatted round the hearths at night or over their flint chipping in foul weather by day, nor women as they scraped hides, tended the fires and nursed their babies in the absence of the men. There would be talk of the past, of the arduous present, speculation certainly fearful, possibly wistful, as to spirits and the future. There would be quarrels and dances, certain individuals for prowess, skill or imagination would acquire prestige and some rude sense

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of leadership ; the stranger possessed of such gifts would be not unwelcome.

Thus the advent of the Laufen oscillation was the occasion of an expansion not only of territory but also of enterprise, in which latent Acheulean initiative reasserted itself. Groups from the congested central area entered into occupation of the foothills of the Pyrenees, and thence by fire and combat dislodged the cave bear, a product of the glaciation, of which the great size was probably rendered less formidable by its adoption under stress of circumstance of an omnivorous diet, and the parallel loss of prehensile strength in its claws. Overcome it yielded, as did mammoth and rhinoceros, from its body oil to feed torches, from its bones fuel to feed the hearths. Its pelts furnished clothing. Elsewhere opportunities for more open hunting led to a renaissance of the flint industry significantly combined with the use of bone for domestic, personal and imaginative purposes. Late Mousterians employed the ankle-bones of horses and oxen as chopping or cutting blocks and perforated small bones and teeth as ornaments and large bones perhaps for some ceremonial purpose. The methods of late Mousterian hunting can be reconstructed in some detail from the material collected at the station of La Quina, Charente. It appears that game was there sometimes driven to precipitate itself over cliffs. More usually no doubt it was killed by marksmanship, for which Neanderthal man employed a variety of weapons, for he could afford to risk no chance of the game escaping. He had darts tipped with unbarbed flint, throwing stones possibly projected from a cleft-stick and probably the bolas, composed of two or three rounded stones enclosed within skin purses which were attached to each other by lengths of sinew. Overthrown and slain the quarry was flayed, eviscerated and cut up ; each of these processes has been traced by marks upon the bones. From the kill men bore home the choice pieces from flank and shoulder to the grottos, where possibly some parts were dried and stored. Within the grottos the flesh

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was scraped off ; the long bones were smashed for marrow and then served as fuel.

The quality of imagination lacking in the utilitarian industry, whereby the Neanderthals supported the unknown framework of their society, is compensated by the ceremonial procedure which invests their funerals with a superior interest. Below the type station of Moustier, in the Vézère valley, is a rock shelter, where was buried, in the early period of Mousterian grotto life, the sixteen-year-old boy, who shows some approximation to the race of Spy. He was laid to rest upon his right side in the attitude of sleep and his right forearm was placed beneath his head. His head rested on a pillow of flint flakes, his nostrils were stopped with flint fragments. By his hand lay a large coup de poing worthy of the best tradition of Acheulean technique. The burial of the man at La Chapelle-aux-Saints, Corrèze, is of the next stage of Mousterian life, when the bitterness of the glaciation was at its full. The old man was laid upon his back with the feet towards the west. The head was slightly raised and the right arm bent so as to bring the hand up to the head ; the knees were bent and turned towards the right. Above the head was a deposit of ox-bones, which show that the flesh was still on them when they were left there. The corpse had been supplied with fragments of quartz, about two thousand flint implements, some broken bones and ochre for adornment. A family interment at La Ferrassie, Dordogne, is of late Mousterian date. A rock shelter contained four skeletons, one that of a man, another that of a woman, two those of children. The skeleton of the man lay upon the ground and had been covered with earth ; the posture was that of sleep, the body lay on its back with the knees flexed and turned to the right ; a large number of Mousterian flints lay around it. The woman lay also on her back with her arms folded on her chest and her legs flexed. The children lay in shallow graves. Slabs of stone covered the skeletons ; close by was a pit filled with ashes and the bones of an ox. The same rock shelter contained also the

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grave of a child of about five years old. This was triangular in shape and the body lay at the narrow end with feet towards the west and the knees flexed. The head, which, as at Krapina and possibly also at Wadi el 'Amud, had been severed from the trunk, lay in one of the basal angles of the pit under a larger slab of stone, that rested on the earth with which the grave had been filled in. The underside of this slab was marked with cup-holes disposed in pairs. This is the first reported use in a burial of these symbols of which the meaning is unknown, but of which the range extends in time through the succeeding Aurignacian culture to the neolithic, bronze, and Early Christian Ages, and in place from Spain to Britain and Scandinavia, and from Palestine to Arabia, North Africa and Hindustan. The spirit of the dead was bound as the Mousterians supposed on a journey, for which it had need of such things as the departed had prized or employed or eaten in life. Meanwhile, the body was at rest, as though in sleep. Men did not desire that the spirit should return to it, or returning walk. Therefore the nostrils might be stopped or the limbs flexed and securely tied or the head covered with a stone, or as an additional precaution severed from the body and then covered. The body was dangerous, fear might lead to its abandonment after it had been covered over. Often with greater forethought, though not less fear, it might be buried. For the soul—*Sit via prospera!* Let it face west going to the genial source of summer breezes, not east, whence in winter blew glacial hurricanes. For the body—*Requiescat in pace!* On the lower surface of the stone work carefully in pairs magic symbols, and be careful that they face the slumbering corpse.

CHAPTER IV

THE COMING OF SAPIENS

I

THE peoples that after the catastrophe of the Würm glaciation replaced Neanderthalensis in Europe were variously representative of the less specialized form of modern man. A more leisurely and sheltered development had secured Sapiens against excessive rigidity of skeletal frame and correspondingly ponderous musculature. Notably the bones of the skull were less massive and a much lighter brain-case, which had expanded symmetrically with the growth of the brain, exceeded Neanderthal type in the complication of the cortical convolutions impressed upon its inner surface, in elevation, and in the capacity of its prefrontal area. Cultural remains justify the conclusion that modern man, as he first appears in Europe during the last phase of the Pleistocene, surpassed Neanderthalensis in the ability to analyse circumstance, to supplement his own experience through selective borrowings from others, and to regulate his conduct in accordance with standards that were orderly and even definitely æsthetic.

The Ice Age of Europe terminated in a series of minor climatic fluctuations which extended between 18,000 and 6,000 B.C. About one-half of this period was occupied by the Achen retreat, during which the snow-line of the Alps gradually ascended 500 metres above the level which it had reached in the second culmination of Würm, and Europe was penetrated by at least five distinct races of modern man. Thereafter it again descended 200 metres in a minor

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glaciation known as Bùhl, to rise again in three successive stages each of 300 metres. Of these the first and second, which alone fall within the Pleistocene, ended in local arrests of the thaw known respectively as Gschnitz and Daun. The population of West Europe seemingly unrecruited by new migrations between the Bùhl glaciation and the Gschnitz arrest was clearly re-augmented in the interval that separated Gschnitz from Daun. The great Achen immigrations were effected from Asia Minor, from Africa and from the North Asiatic steppe. It may be doubted whether the first of these routes, which was at once the most sheltered and the shortest, had not remained open throughout the Würm glaciation offering to a population of foresters release from territory which, though well wooded and supplied with productive fisheries, was becoming increasingly congested. It had afforded passage to the round-headed variety of *Neandertalensis* discovered at Krapina, and had supplied the population which in the Laufen oscillation had occupied Drachenloch in the Lake Constance region with a prosperous industry in bone. From Daun onwards to about 3,000 B.C. there is evidence that this route conducted far into West Europe the round-headed stock that was ancestral to the Alpine race. Thus the discovery in the lowest of four habitation levels at the French station of Solutré, Saône et Loire, of a tall race of foresters of Alpine head form and supplied with an equipment of utensils in bone and antler serves as a link in the European history that preceded and followed Würm. It is also good evidence for the fixation in Asia Minor of a least-altered variety of modern man, which on the analogy of Drachenloch may be assumed to have been in habit social, orderly and industrious, though not, perhaps, particularly imaginative. This race had supplied an example by which the Krapina Neanderthaloids had apparently profited; its culture was an appropriate source for the selective borrowing of peoples whose endowment approximated more closely to its own.

The route next to become available in the decline of

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Würm, leading from Africa across the Italian and Iberian landbridges, gave access to the lands that lay to the east and west of the area desolated by the Scandinavian and Alpine glaciations. The archæological evidence indicates the early intrusion over these bridges of a technique in flint fracture known as Aurignacian after Aurignac in the French department of Haute Garonne, where it was first recognized. The total distribution of this technique, which consisting of points, blades and scrapers worked on both sides of one edge of a flint flake stands wholly apart from the Strepyan to Mousterian series, is suggestive of its dispersion from the neighbourhood of Abyssinia. Aurignacian flints have been reported from India, Palestine, and Syria, Tunis and Algeria. The Italian landbridge gave them admission to Hungary, whence they spread westwards to Czecho-Slovakia, eastwards to Roumania, and northwards through the Moravian gateway; from this pass they reached Germany on the north-west, Poland, Central and Little Russia, the Ukraine and the Caucasus on the south-east. The Iberian landbridge conveyed them to Spain and France. With these utilitarian and constant forms are locally associated in India, Moravia, Spain and France a highly variable imaginative art, which embraces realistic wall pictures in two modes, and the developed use of conventional figures, which may be either descriptive or symbolical. This imaginative element in culture is commonly also regarded as Aurignacian or as having Aurignacian affinity. Considerations of distribution, of the contrast between a conservative industry and an experimental art, as also of the range in dexterity and mental habit displayed in the latter, contribute to the impression that the Aurignacian culture was composite and resulted from the fusion of divergent experiences.

The term Aurignacian is applied racially to a stock identified by the discovery at Combe Capelle, Dordogne, of a complete skeleton in association with early Aurignacian flints. The remains are those of a man little exceeding five

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feet in stature but of obvious agility. The exceptionally long legs have the disproportionate length below the knee that distinguishes some modern hill peoples, who are expert climbers. The feet and hands were of moderate size. The head form may be described as representing the lowest grade of the Mediterranean stock. It resembles a coarse Australian type, but falls below Australian standard in cranial capacity. The jaw was furnished with a well-defined chin; the nose was wide; the brows were massive. The small brain-case rose from a receding forehead to a slightly gabled crown and then projected in a remarkable posterior prominence, that gave great length to the head. The type has modern representation in Somaliland, Abyssinia, the Nile Valley, Algeria, northern Italy, northern Portugal, southern France, the Plynlimmon moorland of northern Wales and isolated districts of western Ireland. The distribution is thus in close correspondence with the westward passage of Aurignacian flint implements. Since a characteristic form of Aurignacian knife-blade first reported from Châtelperron, in France, is now known to have been manufactured also in Tunis and Palestine we may assume Aurignacian industry to have been controlled by the prestige of an ancestral tradition and without undue temerity suppose that it had originally been brought by the progenitors of the Aurignacian race to Abyssinia from the Iranian plateau.

The migration of Aurignacian man from the well-watered and forested Abyssinian highland is not likely to have been spontaneous. In the decline of the Würmian glaciation the Iranian plateau became a centre whence many peoples departed, carrying with them cultures that had already transcended the economic level of savagery. Amongst the impulsive migrations, which their impact may be assumed to have initiated, the best attested is that which traversing southern Arabia entered Somaliland with an equipment which probably included the bow. This invasion was unlikely to leave Abyssinia, still the meeting-place of many divergent and hostile tribes, undisturbed. Retreating from

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Abyssinia the Aurignacians, divided between a natural inclination to congregate in compact colonies and the fear of pursuit, may have halted in the neighbourhood of Thebes in upper Egypt, where they were exposed to the attack of invaders advancing either down the Nile Valley or by the caravan route from Kosseir, on the Red Sea. Thence, while one body continued north towards Palestine, others diverged to the north-west along a trackway across the still fertile Libyan region, which was strewn with discarded implements of Neanderthaloid manufacture. Reaching Gafsa in Tunis beyond the immediate reach of their invaders the fugitives there established an ill-omened settlement at a time when the rainless conditions of the Würm decline were already contributing to the desiccation of the Sahara. As the game gradually disappeared retreating southwards, this colony was forced to eke out a precarious existence by the collection of land snails and shell-fish. To this emergency may be ascribed additions to the Aurignacian equipment, notably a bone spatula adapted to the wedging of shell-fish from rocks, and a bone point with a cleft base sometimes fashioned with unequal projections as though to give leverage. This implement may have served as a combination tool for the detachment of shell-fish, the breaking down of their shells and the extraction of the meat. More important were the microliths, diminutive flint points, which spreading from Gafsa serve to distinguish a desert variety of Aurignacian culture, which is known as Capsian.

But Gafsa, which, like Thebes, lay at the conjunction of routes, was not a halting-place for the whole body of Aurignacians. Certain groups with the original impetus of migration, and with the hardihood of mountaineers availed themselves of the southern landbridges to enter Europe almost in the teeth of the Würm glaciation. They formed colonies in northern Italy, Hungary and Moravia, and later on the North German plain. As others from Marocco penetrated to northern Portugal the plateau of Spain upon their right still harboured a cold fauna that included rein-

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deer and woolly rhinoceros. Having formed a colony in the Cantabrian Mountains the Aurignacians finally came to rest in Dordogne, where arriving light-handed they for a time reverted to the use and imitation of the Mousterian implements, which had served them in passage between Thebes and Gafsa. Famine, the advance of the invaders, or both later dislodged the settlement from Gafsa, which crossing into Spain established Capsian culture in the south-eastern province of Murcia. It was about the same time perhaps that the Aurignacians of Dordogne occupied the foothills of the Pyrenees, entering into possession of the caves that Neanderthal man had once laboriously cleared of hyena and cave bear.

It is in connection with the passing of ghosts that primitive peoples are apt to retain a misty tradition of the former seats of their race. The Combe Capelle corpse had been buried with flexed limbs, which had perhaps been bound lest the spirit should return and walk, and with such things as the ghost would need upon its journey. These included besides Aurignacian flints, many small shells, some of which had been pierced, and one of the ankle-bones of a boar. The utilitarian value of the flints is clear. The shells lay near the head, those which had been pierced may well have formed an ornamental chain. The unpierced shells and the boar-bone may, as a food offering, have recapitulated the route along which the ghost must travel to the ancestral homeland. It would require shell-fish as it traversed the desert area of the North African coast, before it reached the Abyssinian highland, where boar was plentiful.

Abyssinia was well situated as a meeting-place between two peoples, one like the Aurignacians themselves of eastern origin, the other either ascending the Rift valleys from the direction of South Africa, or entering Somaliland across the Arabian landbridge. Nor can we well account either for the widest dissemination of Aurignacian flints, or for the imaginative element in Aurignacian culture without supposing some measure of fusion with the Aurignacians of a

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second race, which was by habit more vagrant and in endowment artistic. It is to such a people that we may attribute the Aurignacian flints and cliff pictures discovered in India, a superior example of the conventional treatment of the figure of a woman traced in waved lines, known as *macaroni*, that has been discovered at Predmost in Moravia in association with the latest forms of Aurignacian implements, and the transportation of Aurignacian flints into the Caucasus. For these indications imply a freedom of movement, a capacity for entering into relations with other peoples and a pictorial technique beyond the apparent range of Aurignacian capacities. Materials are lacking neither for the recognition of the presence of such a race within Europe during the period preceding Daun, nor for estimating the part which it played historically in cross-fertilizing the culture of other peoples.

The western frontier of the Italian province of Liguria abounds in marine caves in one of which, known as the *Grotte des Enfants*, have been discovered the skeletons of a woman and of an adolescent boy, who received burial with Aurignacian flints and with reflexed limbs that recall the sepulture at *Combe Capelle*. Other features of this interment appear, however, to have affinity with northern practice, and the physical type is certainly not Aurignacian. Grimaldi man, so called after the property on which the *Grotte des Enfants* is situated, though in stature below modern European average, may well have been taller than the Aurignacians, his legs are even longer in proportion to the body, and the length of limb below the knee is still more remarkable. Both hands and feet were small. The head form had negroid tendencies. A receding chin was surmounted by projecting jaws furnished with large teeth. The nose was broad and flat, the eye orbits were wide and so set apart as to give great breadth to the face. The brain-case rested on brows of moderate weight and was domed in a symmetrical curve that imparted height to the forehead, elevation to the crown, and deprived the long skull of the

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appearance of posterior prominence. Whether the disharmonic combination of a broad face and a long skull is to be regarded in the case of Grimaldi man as evidence of racial admixture or not, it is safe to assume that his proportions owed nothing to Aurignacian ancestry. His large teeth, prognathism and flattened nose suggest tropical differentiation, his symmetrical brain-case, small hands and feet are suggestive of affinity to the South African race now represented by the pastoral Hottentots and the vagrant and artistic Bushman. Statuettes of the period of the Bühl glaciation, which indicate the Bushman features of steatopygy, or excessive posterior obesity, and of short, tightly curling hair known as peppercorn growth, have been discovered in Czecho-Slovakia and in France. Skeletons of Bushman type belonging approximately to the period of the Daun arrest have been discovered in Malta, the Theban area of upper Egypt and Somaliland; and traces of reversion to Bushman type have been reported from graves in northern Italy, Brittany, and Switzerland, which range in date from 3,000 to 800 B.C. Cultural indications of the former distribution of this far-travelled race are afforded by the discovery of microliths of Capsian type together with examples of pictographs executed on cliffs in the Bengal and Madras presidencies of India. With these may be associated the practice of amputation of the finger joints, which is shared by Hottentots, Bushmen, the allied pigmies of Lake Ngambi, on the northern border of the Kalahari Desert, and by Dravidian peoples in the Deccan, whence it travelled to New Guinea and the Tonga Islands at the western extremity of the South Polynesian belt.

South of the Pyrenees in eastern Spain there flourished from the Achen retreat to the Gschnitz arrest a vivacious people armed with the Asiatic bow, that has left in paintings on exposed cliffs the record of the alternations of domesticity, ritual, the chase and warfare that varied their mode of life, and the suggestion that their habits may have been to some extent pastoral. The realistic style of these pictures resembles

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the art of the Bushman ; the human figures, which are seldom absent, are with few exceptions represented in black pigment and have apparently negroid characters. The utilitarian equipment of this area was in part Capsian, for evidence of passage through Gafsa comprises the manufacture of microlithic flints, the local use of land snails as a supplement to a diet otherwise plentiful and the employment of conventional signs similar to those employed in Murcia. There is, however, little reason to assume this population to have been in friendly contact with Aurignacians within the Iberian peninsula. Their settlements were in Estremadura on the Atlantic side of the Spanish plateau, and eastward along the Mediterranean seaboard from Albacete to Aragon, and thus avoided both Portugal and Murcia. These districts abounded in game. The remains of a cold fauna, rhinoceros, moose and reindeer of the tundra, chamois and ibex of the Alps, still supplemented the indigenous deer, ox, horse and bison. The plains produced esparto grass, from which women constructed baskets for domestic use and for transportation in an existence which, unlike that of the Aurignacians, was in frequent movement. The cliff paintings of eastern Spain were effected in washes of various colours, dirty white, yellow, red and black, but always in monochrome and in silhouette. Their purpose appears to be descriptive rather than magical. Abrupt transitions from realism to schematism are frequent, and undeniably quick-witted, serving to emphasize the development of a situation, as when a man in silhouette is shown slaying a stag that is indicated in diagram, or a bison in silhouette confronts a man rendered in diagram. The human studies, though without attempt at portraiture, indicate the vital occupations of a people of great physical activity and greatly interested in their own social life. Whether they be dancing, hunting, or fighting or engaged in ritual they clearly count for more than the beasts of the chase. The artist is so certain of this common-sense value that he can afford to indulge in humour, even in a penchant

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for the grotesque. Women have pendant negroid breasts and wasplike waists. They are nearly always depicted clothed in a skirt which hangs from hip to knee ; at Cogul, Lerida, where women are seen dancing round a diminutive male figure, the skirt reaches almost to the ankle. Men are depicted nude with various head-dresses and sometimes as wearing ornamental tufted garters. They go to war naked, armed with a bow, which is concave at the handle and towards both ends, and advance boldly in open attack. For hunting the bow is supplemented with darts.

In the intermittent cultural exchange which may be assumed to have linked the Aurignacians with the South African race the latter must rank as the more apt pupils. They assimilated to their own more generous equipment whatever Aurignacian man possessed of utilitarian value, imparting in return but the rudiments of the technique and none of the spontaneity of their own pictorial art. The Aurignacian cavern art contains most of the elements of the wall paintings of Bushman affinity, but their use hesitates both in purpose and in execution. Although Grimaldi man seems to have lived greatly in the present and Aurignacian man to have clung with great tenacity to the traditions of his past, the Aurignacian artist made no attempt to construct a narrative and carefully avoided the portrayal of human form. His work was effected by torchlight in the secret recesses of caverns, where his first essays have the appearance of experiment in an almost forgotten lineal grammar. The cavern walls of Cantabria were still wet when they received finger tracings of macaroni lines which made no attempt to portray any natural form, but probably held mystery both for the artist and for his fellows. In a succeeding stage, when perhaps the Cantabrian colony had been joined by more powerful magicians from the south, the Aurignacian traced, still without a tool but upon the more slowly drying cavern floors, rude studies of animals to which he endeavoured to give relief by the introduction of interior lines. As the cavern floors in their turn dried these sketches were succeeded

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by a return to the use of the vertical surfaces of walls and to the tracing of macaroni lines together with punctuations of the character used by the Bushman for stippling. This return to technical rudiments, which was made possible by the use of some very primitive tool, such as a stick, is characteristic rather of the workman than of the artist. Yet another influx of men from the better informed south may have been needed for the use of vertical surfaces for the depiction of animals. The earliest known example is a heavily incised silhouette of the African straight-tusked elephant, an improbable survival in Europe from the pre-Würmian period. The sketch, which may have been executed from a memory impression formed in Africa, had necessitated the use of a coarse graving tool of flint. It displays but two limbs and was completed with a heart-shaped wash of paint over the vulnerable region behind the shoulder. The use of colour was apparently regarded by the Aurignacian magician as lethal, for it was reserved for the representation of dangerous animals such as the elephant, mammoth and rhinoceros. Owing to more favourable climatic conditions game was more abundant in Cantabria than in Dordogné, and the Cantabrian artist had from the first not only more frequent opportunities of technical inspiration from the south but a wider field for the selection of his animal subjects. Thus there arose a second and more important purpose for the magician, who by selecting as subjects the females and young of inoffensive species of game, and by rendering them lifelike by the use of internal lines, might hope to augment their numbers. This sympathetic magic was carried to Dordogne, where the portrayal of valuable forms followed an increasing order of frequency from deer to bison and from bison to forest horse. The culmination in technique of the pictorial magic of the Aurignacians is to be seen in the figure of a rhinoceros engraved with interior lines on the walls of a cavern at Font de Gaume, Dordogne. Here both posterior legs are shown and the body has been completely washed over with red paint.

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Apart from the sepulture at Combe Capelle and the evidence for a cult of hunting magic in the caverns of Cantabria and the Gironde district of France, we know little about the ideas of Aurignacian man and can only speculate as to the organization of his society. Yet in the closely congregated centres of Aurignacian population it is to be assumed that there obtained some form, if not of government, at least of authoritative leadership. Prestige can hardly amongst so conservative a people have failed to attach to the kind of man who in the past had been responsible for the decision of anxious questions of settlement or of renewed migration and who in the present exercised initiative in the composing of quarrels, the planning of hunts and the reception of itinerant magicians or other strangers. Even the persons of such leaders may have been distinguished, for the Aurignacians had uneyed needles and decorated either their bodies or the skins, with which they clothed themselves, with strings of shells. As the climate changed from cold and dry to moist and temperate, southern France became reafforested. Steppe horse and bison retreated to the north and the Aurignacians of France were free to relinquish their caves and rock shelters for a more open life such as the Murcian and even the Cantabrian colonies had long enjoyed. They followed the game plainwards in the summer and returned in winter to their shelters, where the seasonal migration of the game probably supplied their needs. Cave art became stationary, for men had no longer need to procure the increase of game through magic. The Aurignacians would be more usefully concerned with the increase of their utilitarian equipment. Representations of gabled hunting lodges began to appear on the cavern walls. Straighteners consisting of bones and antlers pierced with holes were in more frequent requisition for the preparation of shafts. Tanged and shouldered spear-points appear together with new forms of planers and scrapers. Such acquisitions were not necessarily of local invention; they may have been survivals imported from Murcia, for the

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renewal of such prosperity as their ancestors had once enjoyed in the distant African homeland was less likely to stimulate intellectual progress than the conservative sentiment of racial cohesion.

The drying of the plains which followed the Würm glaciation had acted not only on the Sahara but also on the Eurasian steppe and had driven westward herds of steppe horses. Where these congregated the Aurignacians made their summer hunting camps. Such a camp existed at Solutré, sheltered on the north by a high cliff and with sunny exposure to the south. The site occupies two and a half acres and has in some places deposits that are thirty-three feet thick. The lowest levels contain three undisturbed burials of the round-headed forest race. One was that of a young adult woman 5 feet 1 inch in height, who had been buried with two young children; the others those of two adult men 6 feet and 5 feet 10½ inches in stature. The three adult bodies lay facing east with two stones placed at the side of each head. To this race may be attributed the extensive industry in bone and horn which in this level includes punches, polishers, spatulæ, perforated antlers and pendants of bone and ivory together with pre-Chellean implements and a hammer stone polished by grinding on both sides. The date of this level is early, for it contains bones of mammoth and cave bear, many of reindeer and some of elk, antelope and deer. Above the forest level are hearths, which have supplied waste cores and Aurignacian flints in such profusion that a single hearth 60 by 30 feet in dimensions contained over 35,000 flints and had clearly been the scene of busy manufacture. In this level the bones of the cold fauna are exceeded by those of the forest horse. Superimposed on these hearth levels was a vast collection, or magma, of horse bones mixed with a few bones of reindeer, cave bear, ox and mammoth, and measuring from one and a half to six feet in depth. The magma was the kitchen refuse accumulated through many seasons of prosperous hunting, which had effected the slaughter of not less

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than 100,000 head of horses mainly of the forest but also of the steppe breeds ; the implements within the magma are of the same type as appear in the late Aurignacian levels of Dordogne.

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The historical importance of the camping ground at Solutré is not confined to the local succession of Aurignacian to forest man. It was subsequently occupied by at least one other race that had penetrated Europe across the northern plain. The magma of horse bones was thickly covered with other hearths contained within elliptical or circular enclosures of rough stone slabs. Around one of these hearths, which was of large size measuring 15 by 10 feet, lay bones of reindeer, of carnivores, of several birds and portions of a mammoth. That these did not obtrude upon the slabs suggests that the superstructure of the hearth was solid ; it may have consisted of earth walls supported by timber or by wattle. If so, its nearest analogy is to be found in the kurgans or mounds of the Russian and Siberian steppes. Within this hearth lay at length a skeleton which had been deposited on ashes or on a spent fire with feet towards the west. The corpse had been furnished with effigies of animals engraved on limestone and flint, which had been mutilated by the breaking off of their heads ; elsewhere were found engravings of deer which had been similarly broken. In addition to these effigies the grave held several flint points worked into leaf shape, of which two were of superior workmanship and size, and a single shell. The culture of this third level is clearly not that of the Aurignacian race. There is nothing to connect this burial with the Aurignacian interment within the Dordogne colony at Combe Capelle.

The sepulchre at Solutré repeats, though with more ample space, the form of dwelling occupied by the living. The spirit of the dead is to travel westwards and has been supplied with a hecatomb of victims of which some were of no value as food, and with a good supply of implements

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ready for destructive use. The technique of these weapons is quite unlike that of the Aurignacians, for, apart from their distinctive leaf shape, the points are thin and worked over both sides with fine flaking produced not by fracture but by pressure with a secondary tool probably of bone or wood. This method of finishing flakes ranks as a distinct invention. It has been found in the earliest known settlements in Mesopotamia and in Egypt, of which the former may be earlier and the latter somewhat later than the third level at Solutré. It was, perhaps, from the Egyptian centre of Badari above Assiut that the technique of pressure flaking subsequently reached Gafsa. So greatly was this technique prized by its northern originators, that they produced javeline heads of a delicacy that could hardly have served any utilitarian purpose. In the department of Saône et Loire, in which Solutré is situated, is also Volgu, where has been unearthed a cache of fourteen large javelin heads reduced by refined flaking to such fragility as to have been probably useless. These specimens had been carefully buried on edge and pressed together so as to avoid fracture from the superimposed soil. Three were shattered by the mattock that uncovered them. It is possible that these *chefs d'œuvre*, in which the technical merit of the flaking exceeded the symmetry of form, were designed for ceremonial use.

Solutré ranks as the type station of this technique, and the people who possessed it are known as Solutreans. They have been provisionally identified with skeletal remains discovered in Central Europe at Brünn and Predmost in Moravia and at Brůx in Bohemia. The average stature was moderate, but above that of the Combe Capelle skeleton, the skull was long, with heavy brows and elevated crown. The Solutreans are generally assumed to have matured on the Khirghiz steppe. They were a practical and ferocious race, fashioning from the skulls of their enemies drinking cups, which have been found in Moravia, Switzerland and France. Their incursion into Central and West Europe during the Achen retreat may be associated with the migration of

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steppe horses from the Gobi Desert ; when, however, their invasion reached Solutré the climate was already beginning to deteriorate. Some pressed on through Belgium to Britain, where their javelin heads have been found at Mildenhall in Suffolk and at Cresswell Crags in Derbyshire, others turned south through Western France to reach Dordogne and the Cantabrian Mountains and to effect a minor settlement in the Pyrenees. It is unlikely that the Aurignacian colonies survived the violence of their onslaught, fugitives may have fallen back on the Murcian colony. The Solutrean invasion of West Europe was an episode. After a tenancy of France for some two thousand years the invaders disappeared as precipitately as they came, leaving on the succeeding culture hardly any discernible trace which can be attributed to an association more direct than that of common origin.

It was possibly towards the close of the Achen retreat that an old man, a woman in child and two young men met a violent death near Les Eyzies, in the Vézère valley of Dordogne. Their unburied skeletons were discovered in a rock shelter at Cromagnon, whither they seem to have crept to die, for the shelter, when they reached it, was already so choked with successive Aurignacian hearths as to provide a place rather of concealment than of habitation. The skull of the woman had been pierced by a blow from some broad-bladed weapon, possibly a Solutrean spear head, which she had survived for some few weeks, giving birth to her still-born child. The skeletons of the young men lay in confusion caused by the subsequent crumbling of the shelter roof. The old man lay at the back of the shelter. Round the bodies were scattered perforated shells and teeth and a pendant of ivory, once composing personal ornaments, fragments of antler, worked reindeer bones and Aurignacian flints. The old man, who with a stature of 5 feet 11 inches and massive frame had retained much of the strength of middle age, was a typical representative of the powerful race named after the scene of this tragedy. The

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ribs supporting the Cromagnon chest were of extraordinary thickness and the attachment of the bones throughout the skeleton exceptionally heavy, giving evidence of great muscular strength ; the legs had great length especially below the knee, testifying to agility in climbing. The shin-bone was flattened as in those modern races that habitually adopt a squatting posture when at rest. The hand was both long and broad of palm, but short of finger. The head form was disharmonic, for though the skull was broad it was disproportionately long, and the short face terminating in a prominent chin was, owing to the height and width of the prominent cheek-bones, disproportionately broad. For these unusual features the natural explanation is that the Cromagnons were of mixed race. The forehead was upright and lofty, flanked by temples which rising steeply rendered the crown of the head peculiarly flat and, when viewed from above, of a shape almost pentagonal. The cubic capacity of the entirely modern brain exceeded the present European average, the prefrontal area was of high development.

The remains discovered in the Cromagnon rock shelter contribute little to our knowledge of Cromagnon usages and ideas. The fortuitous disposal of the bodies and the presence of Aurignacian flints, amongst other objects foreign alike in material and in workmanship to the furniture of the Combe Capelle interment and to Aurignacian hearths, belong to the disaster and suggest no settled order of values. Fortunately Cromagnon interments elsewhere supply these defects. The first impression received from Cromagnon burials is that of domesticity. Double and triple interments are relatively frequent, nor is there any apparent distinction either of sex or age. Burial was held to be important, for one interment is clearly the reburial of a woman whose body had been unearthed by hyenas. The second impression is that of personal dignity. The Cromagnon dead were with rare exceptions buried with outstretched legs, sometimes the feet were crossed or the arms bent at the elbow so that the

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finger-tips touched the chin. They were almost invariably adorned with ochre and with ornaments of shell ; there is local evidence that their bodies were robed in skins. Such ritual attests an individual status sustained by property and inalienable at death. In some cases the corpse was laid to rest with stones placed on either side of the head, as though within a kurgan grave, more commonly it lay upon a hearth, of which the embers might be still alive, so that the body was partially destroyed by fire. In one remarkable interment of late date at the Grotte des Hôteaux, in the French department of Ain, the body had first been buried until the flesh had disappeared, after which the skeleton had been exhumed, disarticulated, carefully though inaccurately reconstructed and laid to rest upon a bed of ochre with characteristic sepulchral furniture. These procedures must have been intended for purification and fall within the class of passage rites, signifying that the dead were prudently dissociated from the group until pollution had been removed from their bodies, but then readmitted to some place in the society of the living. Death was not the sole, possibly not the greatest, calamity that descended on the company denied burial in the Cromagnon rock shelter.

The information supplied by Cromagnon interments is not, however, confined to social values. In addition to personal ornaments the graves contain other funeral furniture, of which portable objects of ivory, bone, antler and stone worked with engraving or carving, and by French authorities comprehensively classed as art mobilier, are of the first importance for connecting the Cromagnon race with the culture, which from its first recognition at La Madeleine, Dordogne, is known as Magdalenian. This culture appears in Moravia in such close association with the Solutrean as to be scarcely distinguishable from it. Both possess the art mobilier and appear to have been almost identical in mortuary practice. Notably a man, who is believed to have been of Solutrean race, received at Brünn a burial which would in other centres have been

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classified as Magdalenian ; the ghost had been provided with a statuette in ivory which makes some attempt at male portraiture and a block of syenite presumably intended for conversion into artistic form. There is, on the other hand, an abrupt separation of Magdalenian from Solutrean at Kesslerloch, in the Swiss canton of Schaffhausen, where the art of engraving is found in each of six phases of development that are recorded in France, and actually surpasses French examples in the representation of a reindeer feeding along the banks of a stream, worked on the difficult surface of a rounded piece of antler. Thus during a protracted period, which was formative for Magdalenian art, the contact between Solutrean and Magdalenian may in Central Europe have been locally dissolved and the latter both fortified by new accessions from the centre of its origin and modified through appropriations from the cultures of other adjacent peoples. Kesslerloch, in the region of Lake Constance, could hardly fail to provide contacts with foresters ; the territory to its north and east had, as we may assume, received populations of the two races that had crossed the Italian landbridge with Aurignacian equipment. A figurine carved in limestone and stained with ochre, which was discovered at Willendorf, near Krems, in Czecho-Slovakia, falls within a development of the art mobilier beyond that which can be ascribed to the Solutreans. The sex is female, the body is of exaggerated obesity, the leg below the thigh received scanty treatment. The tightly circled hair, a conscientious representation of peppercorn growth, and the indication on the slender arm of a bracelet such as adorned the female skeleton in the Grotte des Enfants may be accepted as evidence that the study was from a subject of the South African race. Taken as a whole the numerous and diverse affinities of Magdalenian culture suggest that the race of which it is the expression exceeded all other stocks present in Europe between Würm and Daun in ability to appropriate alien experience and to transmit its own experience to others.

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There is, however, no possibility of doubting the essential unity of the composite Magdalenian culture, which has at once balance, versatility and growth. Its purposive character is displayed in the selectivity which conditioned its borrowings and the artistic standard which pervades the assimilation of extraneous elements. While Solutreans and Aurignacians employed flint as the material for implements of industry and the chase the Magdalenians preferred horn and bone. They reserved flint for use as tools, making indifferent choice as to its quality and expending on it inferior workmanship. Nor did Magdalenian magicians, when they later revived and developed the cavern art of South-west Europe, resemble the Aurignacians either in tentative imitations of Grimaldi lines and punctuations, or in the limitation of their subjects to isolated studies of animals. The art mobilier, which in Solutrean burials was not infrequently destroyed, and at best remained crude in comparison with the technical excellence of weapons of destruction, became in Magdalenian hands a dignified commentary on current values and provided a standard of execution to which workman and magician referred so often as they experimented in a new development. The balance of Magdalenian culture, whether in thought or usage, depended on a remarkable dualism, which is symbolized by an amulet worked in the shape of a double olive discovered in the Mentone district. This dualism is within the economic basis of Magdalenian society illustrated by the combination of hunting with fishing and by alternations in the invention of an equipment appropriate to each of these activities ; it had place in social structure, ritual and art ; Magdalenian magicians frequently depicted animals in pairs. Finally the endowment, of which Magdalenian culture was the expression, was equally apt to envisage ends and to devise expedients for their attainment. Magdalenian deposits and Cromagnon burials concur in testifying to the higher value of the product than of the instrument employed in its production, and of the elevation of æsthetic above

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strictly utilitarian values. Yet the last distinction is one which the Magdalenian workman would not perhaps himself have made. Workmanship served to distinguish property, to satisfy a personal need for creative activity, and to endow material with ceremonial or magical efficacy. Magdalenian artists must have accounted themselves usefully employed, and Magdalenian craftsmen may have doubted the utility of their products until they had completed them with appropriate embellishment.

The external evidence corroborates the impression that the superior Magdalenian culture was that of the superior Cromagnon race. Magdalenian forms have been traced westwards from Irkutsk in Siberia to Devonshire in Britain, and southwards from the Somme valley in France to the Grimaldi caves of Italy and the Cantabrian Mountains of Spain. They are wholly absent from Palestine, North Africa and Spain south of the Cantabrian Mountains. Their sequence in France is continuous from an earliest and least-developed stage at Le Placard, to the north of the Gironde estuary, to the third stage at La Madeleine, and the fourth to sixth stages in the Pyrenean provinces. The total evidence is thus in favour of an Asiatic origin, a penetration of Europe across the northern plain and a local development in the Lake Constance region of Switzerland.

Cromagnon remains, though not of a distribution co-extensive with Magdalenian, lie wholly within the area of that culture, and are like it absent from the southern route of Aurignacian and Grimaldi entrance into Europe. Interments at Brunn, Obercassel, near Bonn, and Paviland in South Wales suggest a Cromagnon migration westward from Moravia, which was in part diverted southwards through France, where Cromagnon and Magdalenian relics are associated in Dordogne, to Mentone, where the evidence is mainly racial, and to Cantabria, where it is more distinctively cultural. The Cromagnon race attained its maximum physical development in Italy, where the Grimaldi caves have supplied a series of fourteen interments showing

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that out of five adult males whose skeletons have been preserved, three were of a stature exceeding 6 feet 1 inch and two were above 6 feet 4 inches in height. To these remarkable evidences of physical superiority there are two notable exceptions, each of which may serve as an indication that the Cromagnon race was of recent origin and as yet unfixed. There is, in the first place, in spite of the obviously favoured position of Cromagnon women, an extreme disproportion between male and female stature. We have in the second the case of a man, who received an unusual form of burial at Chancelade, Dordogne, not only a stature below 5 feet but an approximation in head form to characters now represented by the disharmonic Eskimo. It may be that the Cromagnon race was at the time of its appearance in Europe so youthful that the conservative feminine type had lacked time to culminate equally with the more rapidly maturing male line, and that the Chancelade man represents a throw-back to a highest common measure of the lineages of the mixed Cromagnon and Eskimo races.

If we would seek a centre whence Magdalenian industry may have spread eastwards into Siberia and westwards into Europe; where also a race such as the Cromagnon might have been fortunately blended and habituated to a variety of occupations including those of the forest, the plain and the sea, the area which most clearly fulfils these requirements is the Caucasus. Here the forests slope down between the Black and Caspian seas to the Russian steppe, and the modern population, the backwash of many migrations, exceeds that of Abyssinia in variety. Nor is it improbable that the retreat of the ice-foot in Asia Minor towards the close of the Pleistocene should have led to the meeting of Mongoloids from the Tibetan plateau, Solutreans from the Khirghiz steppe and the eastern or Anatolian representatives of the forest race of Drachenloch and Solutré, and to the foundation of a mixed race that inherited a composite culture. We may even guess how the racial elements of

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Cromagnon ancestry may have mated to produce an exceptional freedom of outlook. Cromagnon man had from the forest stature, breadth of skull, and tenacity of purpose, from the plateau prominence of cheek-bone, narrowness of eye orbit and endurance, from the steppe length of head, strength of jaw and wanderlust.

Deposits, which date from a time when the Buhl glaciation was already in progress, show the Cromagnons entering France light-handed owing to the Aurignacians nothing, and to the Solutreans little save vacant possession of the caves. Their flint tools were typically of poor material and devoid even of secondary chipping, some barely escape classification as coliths. Their equipment for the chase consisted of bone assegai heads, lance-like points with rounded base and engraved with ornament that sometimes resembled the wheat ear. They had, unlike the Aurignacians, but like the Solutreans, eyed needles of bone. At Le Placard, Charente, they found and possibly used drinking vessels which the Solutreans had cut from the skulls of their enemies. Thence the Cromagnons, leaving a colony in Dordogne, passed on through Landes, and, skirting the Pyrenees, established themselves in considerable numbers in the Cantabrian caves. A second route passing Solutré proceeded along the border of the Jura Mountains, until it, also skirting the Pyrenees, reached the sea-board at Mentone. In their passage south the Cromagnons were likely both to encounter and to enter into renewed relations with representatives of the South African race, who had in their Spanish territory remained unaffected by the Solutrean invasion and were now free to occupy the districts left vacant by the invaders. It is significant of amicable relations between the two races near Mentone that the Grimaldi remains in the Grotte des Enfants had in mortuary furniture, if not also in physical type, Cromagnon affinities.

Of all forms of Magdalenian culture that which most clearly connects Cromagnon experience in Central Europe and in France consists of a dual series of human figurines

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carved in the round. The prototypes of these series are a Solutrean statuette in ivory discovered at Brunn and the limestone figurine from Willendorf, the former male, the latter female and obese with attenuated limbs. The technical antecedents of these two forms are probably dissimilar, for the Solutrean carving has affinity with specimens of a form of the art mobilier, in which a stone plaque has been similarly engraved on both sides and completed by the cutting round of the contour so as to give the semblance of sculpture in the round. The series devolving from Willendorf has on the other hand in lack of portraiture, rotundity, and attenuation of the limbs affinity with modelling in clay in which later Magdalenian magicians reached a high level of proficiency. Figurines, whether of women or of cattle, when discovered in Mesopotamia, Egypt or the Danubian area are generally referred to a fertility cult of Anatolian origin that was subsequently developed into the ritual of Cybele, the Great Mother.

Although the French figurines are usually dated to the latest Aurignacian period the internal evidence is wholly in favour of their ascription to the Cromagnon race. If they be of Aurignacian workmanship they had no antecedents or sequel and represent a technique of high development, which was for some unknown reason suddenly revived at the least artistic period of Aurignacian culture and was as suddenly abandoned. If they be Magdalenian they have antecedents, serial development, an important sequel and a discernible purpose. The most important French examples of figurines of the obese negroid series have been found at Brassempouey, Landes, in the Grotte des Rideaux at Lespugne, near St. Gaudens, Haute Garonne, and in the Barma Grande cavern, Mentone. The obese figurine of Brassempouey is in ivory and so greatly mutilated as to be reduced to a torso. Two figurines of this series from Mentone are worked in steatite, one is steatopygous. The example from Lespugne was associated with contoured engravings such as have been discovered in a Cromagnon

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or Solutrean interment at Obercassel. The legs are in this case fused and reduced to a point.

The figurines of the second or non-negroid series are also female and resemble in their least developed form certain Eskimo carvings in ivory. From such rudimentary examples stand apart specimens of an art that is fully mature. Two beautiful figurines in ivory, both unfortunately broken, have been found at Brassempouey. The first, which lacks the head and lower legs, is an admirable example of the modelling of a slim-waisted, broad-hipped female subject of a technical excellence wholly without parallel in Aurignacian art. The second Brassempouey figurine of this series survives only as a head but the clearly cut features take rank as portraiture. The straight hair is braided in an elaborate coiffure which falls to the shoulders; the brows are heavy and project over the root of the long nose; the eye orbits are narrow, the cheek-bones wide and high, the chin prominent and of triangular contour. Each of these characters is Cromagnon. A rude carving on the incisor tooth of a horse from Mas d'Azil, Ariège, represents the upper part of a female figure of which the face bears some racial resemblance to the greatly superior head from Brassempouey. The nose is large, there is a distinct indentation at its root, the forehead is high and almost vertical, the breasts are slim and pendant. The interpretation of the two series here offered is that the Cromagnons during their migration through Central Europe and their early occupation of France and Italy were in insufficient numbers and desired increase of their population. The magician artists hesitated to represent their own race in such mysteries, and adopted Grimaldi models refraining from representation of the face. The obesity is to be attributed to the sympathetic magic of a fertility cult; the attenuated lower limbs and feet sometimes fused into a point reflect the Anatolian art of clay modelling, which had been abandoned through the influence of Solutrean engraving. The Cromagnons had, however, at the same time cause to assert their own superiority

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and for that reason produced a parallel series of figurines, also female, in which Solutrean influence greatly preponderated. The non-negroid series became the vehicle for an artistic tribute to the beauty of female form.

It is possible that the Cromagnon advance in the south was checked by the superior numbers and equipment of the South African settlement in Eastern and Central Spain. It was presumably from this source that the Cromagnons themselves eventually acquired the bow. A great cliff-painting at Alpera, Albacete, is dominated by three gigantic figures thus equipped, wearing feathered head-dresses and, contrary to usage, depicted with clearly outlined faces of aquiline profile. One, as though to emphasize racial distinction, is painted red. Another picture at Saltadora, Castellon, depicts a warrior of similar head-dress falling, wounded to death, with arrows which have pierced his neck, hips and both legs. In France, where the short, small-handed South African stock may be supposed to have been less numerous, the character of the contact between Cromagnon and Grimaldi appears to have been determined in the interest of the more powerful race. The cave of Gargas, Haute Pyrenees, was well fitted to be a centre of cultural mysteries; it was less suitable as a place of residence, for the floor was pierced with deep oubliettes. It had served as an asylum for Neanderthal man and intermittently for Aurignacians, who had there ventured some of their earliest essays in pictorial magic. The Cromagnons seem for a brief time to have occupied this cave, and to have made their own contribution to the adornment of its walls. Between the stencil of a fishbone on the top left, and of punctuations on the bottom right corners, the former possibly Cromagnon, the latter probably Grimaldi, and clustered round the stencil of a large, short-fingered right hand, broad and long of palm, are the stencils of many little hands, more numerous left than right, effected in black and red, Grimaldi and Cromagnon colours. These small hands are terribly mutilated, a feature not found in similar Cromagnon

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handprints in Spain, but represented elsewhere in the early Cromagnon occupation of southern France. In modern practice amongst savage peoples of the southern hemisphere the amputation of finger-joints serves various purposes but is more prevalent in the case of females than of males. It may enter into puberty rites or be distinctive of caste ; amongst women it may stand as evidence of chastity, betrothal or mourning for the dead ; it may be a form of sacrifice in misfortune or a security for the safe passage of ghosts to the land of spirits. In all these uses may be traced the conception of some link between the individual and his fellows, and the mutilation therefore falls within the general conception of a ritual of passage or aggregation to the social life. The extent of hand mutilation represented at Gargas is, however, so wholesale and severe as to suggest an extraordinary enforcement of ritual beyond the degree to which a native institution was likely to be voluntarily carried. It may conceivably stand for the servile aggregation of members of the small-handed Grimaldi race to Cromagnon society.

Another possible link between Cromagnon and Grimaldi history in France is supplied by the appearance in Dordogne at Laugerie Basse and Laugerie Haute, the latter also a Solutrean station, of examples of the bull roarer. This implement consists of a pierced oval pendant, which when whirled above the head by means of a cord emits a formidable booming sound. Its modern distribution indicates a northern origin. It lingers as a toy in parts of Poland, Switzerland, England, and Wales, where it may conceivably be the prototype of the wooden rattle used to scare birds ; it was conveyed across Siberia to the North American tundra and thence penetrated as far south as Mexico ; it attained great ritualistic importance amongst the Australians, by whose ancestors it was probably carried from the shores of the Caspian Sea to the Melanesian centres of New Guinea, New Hebrides and New Zealand. The magical significance attached to the bull roarer may perhaps be ascribed to its

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transference from steppe equipment, in which it had served to drive game, to the Caucasian forest area, where its note resembled the passage of the wind through trees. In this area it may well have been included as an accessory in the fertility cult and made for that reason a mystery to be carefully preserved from the knowledge of women. The bull roarer enters into the hunting equipment of the Bushman solely as an implement for driving game. It is possible that during the Buhl glaciation the bull roarer was used in France by the Cromagnons, as by the modern Australians, for purposes of aggregation and passed into the possession of Grimaldi males on the occasion of their admission to group services, while the reduction of females of the same race to servitude was celebrated with finger mutilation and hand stencils.

3

On the western route of their advance through France the Cromagnons encountered a situation which was highly educational. Driven by the increasing cold to the shelter of the caves, they were there confronted with the spectacle of Aurignacian wall pictures of which the significance was in part apparent, for they belonged to the magics of fertility as did their own figurines, and of destruction, as did the Solutrean art mobilier and possibly also their own. With the full significance of the specialization of animal subjects to the exclusion of human they were to become acquainted, as the caves became crowded and game contemporaneously scarce. Perhaps the Grimaldi with whom they were associated acted as the pilots of their investigations, for they were themselves mural artists and in particular competent to explain signs and punctuations. Meanwhile Cromagnon hand stencils both in Dordogne and Cantabria seem to show that Magdalenian artists were literally feeling their way towards expression through a new medium in which Aurignacian technique was so crude as to be in no useful degree inspiring. The conditions of cavern art were novel,

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embracing an unfamiliar surface, the unwonted use of artificial light and a fuller dependence than in the art mobilier on drawing from memory. The cavern walls became material for repeated and progressive experiment. Magdalenian artists guided their steps along the intricate passages of caverns by means of lamps rubbed out of grit-stone and supplied with animal fats as fuel ; they appear to have entered with zest into the surmounting of difficulties of approach and not infrequently selected surfaces on which it was necessary to work in a posture of great restraint. So intimately were ends and means connected in the vivid pictures of Cromagnon imagination, that Magdalenian artists excelled in the realistic portrayal of movement and laid under contribution Grimaldi punctuations for the representation of the flight of stone missiles.

The progress of mural art serves to distinguish the transition from occupation to settlement, which may rank as the second period of Cromagnon history in Cantabria and Dordogne. In the peak of the Bühl glaciation the rigorous climate kept these centres apart, and distinct experiments were made in each towards the transfer of technique from the art mobilier to cavern walls. While in Cantabria these early essays were confined to engraving, in Dordogne a very early attempt was made to adapt sculpture in the round to the new surface. The cave of Castillo in Cantabria has provided a singularly clear example of the mural reproduction of the engraved head of a hind originally worked on bone. The copy is very close to the original and the task has clearly evoked the full powers of the artist ; of the two it is on the whole the more finished production. But it shows the limitations imposed by the new material. The outline on the rock is firmer, striations on the internal surface of both engravings are in the case of the copy more abundant and regular, but the copy has become relatively statuesque and immobile. The first essays in carving in high relief appear at Laussel, Dordogne, and there take the form of human figures cut on small blocks of limestone

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measuring about eighteen inches in height. Three of these blocks were used for the representation of female forms of negroid character and with obvious affinity to the obese series of figurines. They are, however, of a level of workmanship intermediate between the negroid and Cromagnon series. The fourth block represents a group that is still more clearly connected with the fertility cult. The fifth block bears the figure of a well-proportioned man wearing a girdle similar to that present in a figurine from Brassempouey, which is of the Cromagnon or non-obese series. This figure stands in the attitude of a bowman with left arm extended and right arm flexed and drawn back. The presence of this male figure without negroid characters in association with representations of negroid women seems to link the story of Gargas with that of Brassempouey. Cromagnons and Grimaldi live together in Dordogne but Cromagnons are dominant and Grimaldi subserve Cromagnon ends. Perhaps Cromagnons in France have acquired the Grimaldi bow, perhaps the male carving at Laussel represents a Cromagnon taking stencils of Grimaldi hands. A next stage in relief sculpture in Dordogne suggests that climatic conditions had created anxiety for the control of migrations of game. A frieze at Cap Blanc about 7 feet in length represents a procession of eleven bisons and horses; the head of a single horse was carved on the wall at Comarque. The art of relief sculpture seems to have made no further progress. Perhaps it was too lengthy a process to correspond with the urgent need of increasing the food supply, or the growing population of Cantabria may have encouraged magicians from Spain to wander into France in spite of conditions adverse to travel. As the Bühl glaciation approached its peak the grottos fronting caves became crowded, food supplies became more meagre, and the population of Dordogne appears to have concentrated on the improvement of its equipment. In a district abounding in flint, the decreasing supplies of wood, bone, antler and ivory still remained the material of implements, flint served

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for tools and gravers. The assegai head was perfected, the efficacy of shaft straighteners augmented by engraved ornament. A little later the assegai thrower was invented, a weapon, which, greatly extending the range of projection, and leading through assiduous practice to superior marksmanship, was not unnaturally regarded as endowed with magical power, especially when embellished with appropriate ornament carved in the round.

When the Bühl glaciation at length passed its peak the climate of Dordogne remained cold. Rhinoceros, mammoth, musk-ox and reindeer, though still winter visitants, were gradually replaced by a great variety of steppe, meadow and finally forest forms. The congested population of Dordogne began in consequence to make more liberal use of rock shelters, to inhabit in summer huts constructed of timber and covered with hides and to enter into occupation of the caves of the Pyrenean area. This expansion led to renewed contacts both with the conservative north and, either directly or through the Cantabrian colony, with the Grimaldi culture of Eastern and Central Spain, a balance of opportunities to which Cromagnon temperament reacted with discretion though to the suppression of most remaining traces of early Solutrean influence. The first indication of constructive change is economic and foreshadows the development of riverine fisheries. The series of assegai heads received no further modification and industrial invention became concentrated on the evolution of the harpoon. The acquisition of this implement, which may have been imported from the north, was possibly contemporaneous with the adoption of the Grimaldi bow from the south. At the same time carving in the round was applied with great elaboration to the adornment of straighteners, throwers, and of staves, intended apparently rather to distinguish eminent persons than for economic use. This elevation of persons competent to undertake duties of leadership was likely to be accompanied with a corresponding reduction in the status of individuals conspicuously

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defective or divergent from the prevailing Cromagnon type. Thus the exceptional burial of the dwarfish Cromagnon at Chancelade, which was made without ochre or ornaments and with limbs flexed, in apparent exaggeration of Grimaldi usage, and with the body bound in a crouching and distorted posture, may represent a special form of interment devised by his fellows as appropriate to his diminutive stature and the dependent position which he had in consequence occupied in the now extended stratification of society. His rôle in life may have been that of a buffoon or jester employed in ritual or attached as a foil to the dignity of some eminent personage. Nor was a new centre likely to be occupied without defensive mysteries. The cavern of Tuc d'Audoubert, Ariège, in the central Pyrenees, is peculiarly difficult of access. It consists of a series of chambers formerly the haunt of the cave bear and connected with narrow passages, sometimes little more than tunnels, through which men can pass only by crawling. The floor of an outer chamber is marked by the impress of little heels, as though Grimaldi had danced there with toes lifted from the ground. These heel-marks are accompanied by sinuous tracks, possibly produced by a shuffling movement of the dance. Further in is a stalactite chamber of great beauty ; within again is a chamber containing the material and various stages of workmanship in the Cromagnon art of clay-modelling. The completed specimens consists of two bison, male and female, fully modelled only on that side which was exposed when they were placed in position against a mound of rock in the middle of the chamber. This work, which recalls the Anatolian figurines of oxen discovered at Anau, indicates a renewal of the technique of carving in the round as distinct from Solutrean engraving.

As the snow-line continued to ascend a temperate climate became established even in the Pyrenean area and the Cromagnons of France enjoyed such hunting as had previously been the lot only of the favoured colony in Cantabria. Thus relieved from the pinch of necessity the Cromagnon

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intelligence, long disciplined by adverse circumstances, found expression in invention and became a still more selective borrower from the south. The cavern of Niaux, in the central Pyrenees, contains wall engravings of beasts marked with arrow wounds. Fish begin to be represented in cave art ; the fish spear-head of bone becomes a harpoon head of antler, a modification that implies concentration both on the industrial equipment and on the practical pursuit of fisheries. For the detachable harpoon head requires a material that admits of deep incision with suitable barbs and experience in appropriate ties, and the harpooner has need both of patience and dexterity. The promotion of fisheries during a period abundant in game indicates the provident adoption of a staple capable of intensive exploitation and at least a partial separation of the sources whence the Cromagnons supplied themselves with food and with clothing. The period was equally one of transition in mural art. Cantabrian contacts between Cromagnon and Grimaldi had been productive of an interchange in technique. Thus upon a cliff known as Roca del Moro in Aragon stags have in accordance with Cromagnon practice been first outlined with engraved lines and subsequently painted, while in Cantabrian caves at Portal and Passiega stags, and at Portal a horse, show traces of Grimaldi treatment. A cliff painting at Cogul shows Grimaldi hunters equipped with Cromagnon assegais and spear-throwers ; Cantabrian artists were experimenting in Grimaldi pigments towards the production of bichrome and polychrome paintings. The period of expansion was indeed dangerously experimental. In a versatile race not every man could become a bow-maker or a maker of harpoons, a hunter or a fisherman, an engraver of the art mobilier, a realist or impressionist in art, a combiner of pigments, a magician, chieftain or poet. Each if successful was likely to specialize the pursuit of a peculiar efficiency and to make a distinct contribution to the social welfare. Crisis might give rise to a general confusion of the newly established values.

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The situation is effectively summarized in the cavern known as Les Trois Frères, which is contiguous to that of Tuc d'Audoubert. Its walls are decorated with pictures of animals effected in an unusual technique consisting of the scraping of the brown surface so as to supply a white drawing on a dark ground, a method apparently of Cantabrian origin. These pictures, several hundred in number, are dominated by a single figure painted at the top of the wall which faces the entrance of the chamber in a position so difficult of access that the persistence of the artist is only surpassed by the subtlety of his thought. The representation is that of a masked man engraved and so banded with black paint as to call attention to the diverse features which it combines. The head bears the horns of a stag, the face of an owl, the ears of a wolf, the beard of a man. The long semi-erect body terminates in the paws of a bear and the tail of a horse ; the rump, legs and feet are those of a man. This is clearly such an allegorical composition of attributes as is illustrated by the painting of the Faithful Servitor at Winchester. It attests a remarkable facility in the abstraction and recombination of ideas into an imaginative whole. But above all stands the fact that the magician artist is paying a conservative tribute to the ability of his race. He is celebrating the power of a hunter, that has brought into subservience durability, vision, hearing, wisdom, strength, speed and fertility, wherever these were most conspicuously to be found.

Although we have no information as to the extent to which this conviction of the superiority of human nature was manifested in the structure of Cromagnon society, it is safe to assume that so bold an individual effort of poetic imagination could hardly have been acceptable unless prosperity had led to a considerable emancipation of thought from the commonplaces of a purely defensive social organization. We may suppose that progress in the division of labour was contemporary with the consolidation of groups into larger unities ; that Cromagnon speech, reflecting the

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same facility in analysis and synthesis and reaching a parallel precision of vocabulary and lucidity of structure, must have become an effective instrument for oratory and folk-lore, and that dancing served as a vehicle for self-expression. The spirit that pervaded Cromagnon France in the fourth or middle period of Magdalenian culture may indeed have been over-confident. There arose a method of representing humans or spirits which dispensed with dignity. Men appear as grotesques, as masked for dancing or simulating animals much after a manner common in the art of the Bushman. A beautiful baton discovered at Teyjat, Dordogne, was adorned with spiritualized human figures masked for the dance and sketchily indicated amongst engravings of animals.

The Gschnitz arrest brought the prosperity of the middle Magdalenian period to a close in France. The population was once more largely confined to the grottos, which provided inadequate accommodation for its increased numbers. Imagination lacked its accustomed incentives, parenthood became burdensome, there was ground for scepticism as to the efficacy of the magical cult of fertility applied to game. Fish fortunately still ascended the rivers in abundance and reindeer antler was more plentiful. The Cromagnons set themselves diligently to the exploitation of this main food staple and perfected the harpoon. The fishing was seasonal, for though salmon was probably at this time abundant, it was not necessarily represented in a sufficient variety of species to provide a constant succession of supplies, which were therefore probably conserved. It seems as though the Cromagnons in France had become in some measure dependent on those of Cantabria. Perhaps some part of the dispirited population migrated thither, for the last two stages of Magdalenian culture are represented in Cantabrian caves without earlier antecedents. The great age of engraving was passed and was succeeded by etching and impressionist representation of Cantabrian origin, that penetrated to some French centres together with polychrome wall

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painting with results that were not wholly harmonious. The outlook of the French colonies became utilitarian. The discovery at St. Marcel, Landes, of a double chisel in bone carved with a basketry pattern suggests the introduction from Cantabria of an industry native to the esparto area of the Iberian plateau. Increase in the use of conventional signs, the appearance of a series of messenger sticks thus inscribed, and the still more significant reappearance of Aurignacian forms in flint indicate the presence of strangers from Murcia. Borrowings from an alien centre to the north may be detected in spiral forms of ornamentation, and in the late tendency to finish the barbs of harpoons in trapezoidal forms that were not particularly well adapted for the purpose of fishing and, if they are to be explained as intended for ceremonial use, have little affinity to the self-sufficient philosophy that created the "sorcerer" of Les Trois Frères.

The Gschnitz arrest ceased with a resumption of drier and more temperate conditions, but the excessive rainfall had converted the loess deposited in the decline of the Bühl glaciation into loam, which was favourable to the encroachment of the forests on the previous plains. The withdrawal of the cold fauna, therefore, failed to give succession to steppe species and the Cromagnons were embarrassed by the necessity of awaiting the arrival of forest and meadow forms. While fish remained abundant in the Vézère and Garonne the main food staple was secure, but its exploitation more difficult, for the retreat of the reindeer was a severe blow to the fishing industry, withdrawing the supply of antler out of which the harpoon had been gradually perfected. For this the antler of deer, spongy at core, was a poor substitute, since it was necessary that it should be split before it admitted of deep incision in the manufacture of barbs. But other causes must have contributed to the acceleration of the Cromagnon decline in France, whence the characteristic cave art from this point entirely disappears. It is possible that the change of climate diverted

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northward the migrations of the fish on which the food staple chiefly depended, and that the supply of antler was restricted by the presence in the forests of the first representatives of the round-headed Alpine stock whose great migrations into Europe began about the period of the succeeding Daun arrest. The advance of peoples from the north has on the whole the appearance of peaceful penetration. Peoples were also advancing on the Pyrenees from the south ; in this case the advance appears to have taken the form of a hostile invasion, for Cromagnon culture disappears from Cantabria and the Grimaldi perhaps contemporaneously from eastern Spain. In the cave of Marsoulas, Haute Garonne, crescents, bands of colour and other signs of unknown significance and without Magdalenian affinity were painted by the race that superseded the Cromagnons. A broad band furnished with barbs which traverses a polychrome painting of the late Magdalenian, may stand as a symbol of the final defeat of the Cromagnons by a people of inferior culture when, weakened in their long duel with circumstance, they lacked the means of fighting the forest.

CHAPTER V

THE NEAR EAST

I

IN Europe the forest descended on the palæolithic drama like a curtain. The mesolithic interlude which followed is distinguished by the appearance of microlithic flints of geometric shape which, when attached with resin to handles, served as tools for sawing, cutting, graving and carving. These microliths, which have been discovered in the desert of Gobi, appear to have been of an Asiatic plateau origin, and to have entered Europe mainly through the agency of foresters. They were there appropriated by other stocks and modified in accordance with distinct traditions. In the Solutrean and Magdalenian north, where craftsmanship in stone remained superior, the microliths tended to assume trapezoidal forms, known after the village of Fère-en-Tardenois, Marne, as Tardenoisian, and were locally associated with realistic engravings. In the south-west they tended to develop into knife-like forms known as Azilian, after the tunnel of Mas d'Azil, Aude, where they were associated with symbolical signs, engraved or painted on pebbles. The materials upon which these tools were employed are in each case mainly the wood, bone and antler of the forest, and the characteristic implement is the harpoon cut out of deer horn.

As the climate that succeeded the Gschnitz arrest became increasingly humid and warm, the forest advanced wherever the soil afforded foothold, and great expanses of North Europe became encumbered with swamp. Both in the

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south and in the north the successors to Cromagnon territory became perforce successors also to the Cromagnon fishing industry, and were in a predicament which predisposed them to friendly relations with men skilled in the exploitation of forest products. But it was only in the north that this industry continued to enjoy a considerable measure of prosperity, and those of the southern immigrants who failed to make good an early passage to the coasts and forest-resisting strata of the north-west were trapped in isolated localities, where their livelihood degenerated into beach-combing with shell-fish as the main food staple. In the north this degeneration was delayed, and the newcomers acquired the art of constructing habitation platforms on marshes and the use of the shoulder-blades of forest animals for the grubbing of roots and for the excavation of pit dwellings.

The mesolithic interlude, which between 8,000 and 6,000 B.C. was played before the curtain of the forest, owes its coherence mainly to the significance which it imparts to the neolithic drama that succeeded it. It is for us made up of a series of disconnected tableaux, that observe no obvious unity of time, place or action. Its chronology is by no means clearly defined either in date or in sequence. Various peoples make their appearance with anomalous equipment and in unexpected localities.

The *dramatis personæ* are no longer Aurignacian, Cromagnon and Grimaldi. These races have disappeared as ethnic entities and are replaced by prototypes of the modern races of Europe, Nordic in the north, Mediterranean in the south and west, Alpine in the centre. The Tardenoisian Nordics were probably akin to the men of Brunn, Predmost, and Solutré, but they were of less specialized type and less rugged of head form. Of the Azilian Mediterraneans we know less, but the evidence available from the English South Downs, the point of their most northerly penetration, shows them to have been prominent of forehead and of cheek-bone and moderate in the develop-

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ment of brow-ridges. They too belonged to a type which, though not fully modern, was less specialized than that of their Aurignacian predecessors. The Alpines of mesolithic times are on the other hand identifiable in head form both with the forest stock, whose remains underlie the Aurignacian level at Solutré, and with their modern mid-European descendants. They may be assumed to have matured slowly under conditions that remained approximately constant, and to have been in consequence peculiarly endowed with capacity to resist bodily specialization. Upon them rests the main responsibility for the continuity of mesolithic life. Since their activity is present or implied in almost every incident of the interlude, they may be supposed to have occupied the stage behind the curtain in considerable numbers.

The first tableau of the interlude appropriately presents Alpines, in the Belgian valley of the Lesse, where a cemetery at Furfooz contained burials of foresters, whose rounded crania, not greatly differing from those of Asiatic Mongoloids, were associated with a late Magdalenian equipment. A more dramatic appearance follows in a mortuary cave at Ofnet, north-west of Munich, where Magdalenian forms were absent and the equipment consisted of microlithic flints, associated with ornaments made of stag-tooth and of snail-shells and with the bones of a modern post-glacial fauna. The human remains consisted solely of skulls, which had been severed from the trunk with flint implements and nested by successive interments in a bed of ochre. The cave held two such mortuaries, carefully arranged in circular rows so that each skull should face westwards. Of twenty-one skulls sufficiently perfect for measurement, five were long and of the Nordic type, eight were round and of forest type, eight were of intermediate form and clearly belonged to the offspring of mixed marriages. The form of burial combined the features of decapitation, preliminary interment, exhumation and westward orientation, all of which have their counterpart in antecedent history, but in

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a novel assemblage and a unique order. The controlling idea of the Ofnet burial may be assumed to have been to provide that the skull of the dead, whether man, woman or child, should be preserved as having within it virtue and that it should be so placed that the spirit might travel forward in the direction that it had pursued on earth. Such a conviction was natural to the decisive Nordics of the steppe.

The next episode supplies the most reliable evidence of the type of the mesolithic Mediterraneans and consists of the remains discovered in Aveline's Hole, a cavern of the Mendip Hills, Somerset. Here the foresters of Solutré, Furfooz and Ofnet appear in association with Mediterraneans and equipped with microlithic tools of the northern or Tardenoisian type. This episode is explained as the scene fades to be replaced by another at Mugem, in southern Portugal, which during a coastal depression subsequent to the Gschnitz arrest was situated at the mouth of the Tagus, but is now some forty miles inland. Here a colony of Mediterraneans, who had failed to make good their passage northwards, had piled their refuse in marine kitchen-middens. Excavations at the foot of these shell-mounds have revealed burials, which were mainly those of women and children and indicate that a Mediterranean settlement had been joined by Alpines bringing with them microliths of the northern type. At this south-western terminus of round-head migration the Mediterranean race preponderated; two skulls of intermediate head form attest the intermarriage, as at Ofnet, of Alpines with their hosts.

The scene of the next episode is laid at Oban, Argyle, the north-western terminus of Nordic migration. Here a settlement of cave-dwellers had subsisted on a varied diet, including scaled fish, shell-fish, crustaceans and the flesh of deer and pig. The cave-dwellers had also hunted otter, badger and wild cat, presumably for the pelts. Amongst other bones found in their kitchen-middens are those of the goat and dog, the latter an Asiatic species, that had been

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imported and perhaps domesticated. The Nordics of Oban, though of short stature, so greatly exceeded the modern European average of brain capacity that they are to be ranked amongst the great-brained varieties of *Sapiens* that are now extinct. They made a liberal use of horn and bone from the forest and employed microlithic tools of the unmodified or Azilian type. This scene also dissolves into a second, which is of later date. The Oban settlement belongs approximately to the same period of coastal depression as that of the Mugem colony. The present basin of the Baltic was then free of ice and was occupied by the Yoldia Sea, which connected by open passages both with the North Sea and with the Arctic Ocean. Subsequently the coast rose converting the Baltic into a great fresh-water lake, known as Ancylus, which was closed both upon the north and upon the south-west. To this period belongs a settlement which lay, beyond the confines of the lake, at Maglemose near the harbour of Mullerup, on the west coast of Zeeland and occupied a large artificial island consisting of a raft of pine-logs, anchored some four hundred yards from the shore in shallow water. Although it is possible that in summer this site may have been converted into a great bog, on the surface of which the raft rested, the Maglemose people may probably be credited with the possession of boats. They combined fishing with hunting and had domesticated the dog. Their characteristic tools were microlithic flints of Tardenoisian type, their main materials bone and horn; they possessed the harpoon carved out of antler. In all these respects they are to be classified as mesolithic. They hafted bone adze and axe-heads in sockets of horn, and from bone also made spear-heads, chisels, awls, needles, fish-hooks and beads. They had a developed art of engraving and incised on bone realistic pictures of deer and linear designs, which they sometimes shaded with cross-hatching. Their colonies extended as far north as Bola on the Trondhjem Fjord, where wall engravings of reindeer have been discovered

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incised upon rocks. Thus there existed about 7,000 B.C. a Scandinavian culture of which the composite antecedents comprised microlithic tools and the dog of Asiatic origin; Magdalenian art, both mobilier and mural; and the ability to oppose to the encroachment of the forest platform-dwellings constructed out of hewn timber, which together with the horn-hafted axes may be confidently attributed to Alpine influence.

About 6,500 B.C. a further arrest of the glacial thaw in the Alps, which is known as Daun, was accompanied by a coastal depression, that reduced the Atlantic seaboard to its present level, and by the diversion coastwise of warm ocean currents. West Europe at this time possessed a warmer climate than any that had succeeded the approach of Würm, or has been known since: the rainfall became excessive, forest and swamp reached their maximum expansion. The mesolithic interlude concludes with three episodes from this period, one of which introduces a new race and another a new culture. With a curious dramatic felicity each of the modern races of Europe occupies the proscenium in isolation.

The south-western shore of the Ancylus Lake had subsided, admitting warm currents from the Atlantic. The Baltic, in becoming an inland sea, had attained a high salinity and supported in addition to great beds of oysters enormous numbers of *littorina litorea*, the edible periwinkle. The former raft-dwellers hemmed in with forests of unworkable oak and beech, that had replaced the birches and the pines, had been forced to desert the platforms, which they had inhabited when a supply of suitable timber was available and coastal waters were shallow. Reduced to beach-combing for sustenance they erected on the shores of Denmark and of southern Sweden the shell-mounds known as *kjokken-møddings* which attain to 100 yards in length, 70 yards in breadth, and 10 feet in height. The remains of material culture in these mounds are derived from mixed sources. The domesticated dog seems to have become a

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more intimate companion ; with its bones are forest tools of neolithic type, which had been ignorantly sharpened by flaking. The beach-combers had in use leather cups and bowls which, for protection from the action of heated cooking-stones, were lined with clay.

The second of the three concluding episodes is more prosperous. The warm ocean currents had on the southwestern margin of the forest produced in the Spanish province of Asturias, to the south of the Bay of Biscay, a climate that was semi-tropical. On this sunny shore arose other shell-mounds in the front of caves, which attaining a length of from 100 to 160 feet, and a height from 30 to 40 feet, obstructed their entrances. These mounds, mainly composed of the shells of molluscs, were to the extent of one-seventh of their volume made up of the bones of animals of the forest and of the meadow, including cattle, but without trace of the dog. The remains of material culture, which include no microlithic flints, belong to three successive stages. The earliest, which is distinguished by a stone pick together with scrapers and cleavers of quartzite, indicates a Mediterranean settlement. In the second these implements disappear and are replaced by pebbles drilled with one or two circular indentations and with unpolished awls of bone, while to the bones of oxen are added those of the domesticated sheep. In the third appear shards of crude pottery, burnt on the inside as though by the use of red-hot cooking-stones. It is safe to say that the second and third Asturian levels represent the earliest neolithic of Europe, and it is a reasonable conjecture that this culture originated in Asia Minor, traversed the Alpine causeway, descended to the dry and genial shores of the Atlantic Ocean, and was there reinforced by the arrival along the same route of further Alpine emigrants, who possessed the elements of a ceramic industry.

The last scene of the interlude is laid at Campigny, near Blangy-sur-Bresle, in the French department of Seine-Inférieure. Here, on the chalk upland that had resisted the

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encroachment of the forest and in consequence on dry soil was situated a cluster of elliptical pit-dwellings having on average a major axis of thirteen feet and a central hearth of about half that diameter. The character of the cultural remains at Campigny indicates the intrusion from the south of a people that arriving light-handed were forced to assemble from various sources an equipment upon which they had not as yet put a distinctive cultural impress. Flints include Mousterian and Magdalenian forms in association with picks and cleavers, neither of which were polished by grinding. There are two varieties of undecorated pottery, one coarse, the other fine, and the presence of millings-stones attests some progress in agriculture. It may be assumed that these men were Mediterraneans of the neolithic type which succeeded the Azilian, and it is possible that they had entered France from Italy by the Mentone gap. If so, they left behind them in Liguria others, who attained a slightly superior culture that was independent alike of that of the foresters and of the later neolithic of southern Italy.

Of the three mesolithic races of Europe that which is most constant in type and apparently almost ubiquitous is the round-headed people of the forest. The chronology of the earliest-known migrations of the round-headed variety of Sapiens into Europe can be traced, if not from Drachenloch in the Laufen oscillation, at least from Solutré in the Achen retreat, perhaps about 15,000 B.C. through Furfooz, some seven thousand years later, to the mesolithic of Ofnet, Aveline's Hole and Mugem, thence to Asturias in the Daun arrest of 6,500 B.C., a period of not less than 8,500 years, during which the type may be assumed to have been constant. To this long period may be made from subsequent history a great addition. For his anti-romantic comedy *Arms and the Man*, Mr. Shaw has chosen as his hero Captain Bluntschli, a modern Swiss: "of middling stature and undistinguished appearance, with strong neck and shoulders, a roundish, obstinate-looking head covered with short,

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crisp, bronze curls ; a clear quick blue eye and good brows and mouth ; a hopelessly prosaic nose like that of a strong-minded baby ; trim soldierlike carriage and energetic manner." Captain Bluntschli, a fugitive from battle, has effected peaceful penetration into the bedroom of the heroine, where " he has all his wits about him in spite of his desperate predicament : even with a sense of the humour of it, without, however, the least intention of trifling with it or throwing away a chance. He reckons up what he can guess about Raina, her age, her social position, her character, the extent to which she is frightened at a glance, and continues more politely but most determinedly."

Captain Bluntschli's cultural equipment is considerable. He has three native languages, his rank is that of a free citizen, the highest known in Switzerland. He takes this " huge imposture of a world coolly, and he is happy when he can get two disputants quieted." Judged by his possessions and his ability to use them, Bluntschli is a very successful man. He has two hundred horses and seventy carriages, six palatial establishments, and domestic utensils in proportion. For our present purpose it is important that he is of the Furfooz race of which the European antiquity thus mounts to some 17,000 years.

But it is necessary to turn to Asia to form an adequate impression of the antiquity of the Alpine race. Of the giant foldings of the crust of the earth, contained within the Miocene and Pliocene divisions of time, one of the earliest and finally the most massive was that which gave rise to the central Asiatic highland of the Pamirs, known to its native population as " the roof of the world." This region with a mean elevation above sea-level of 12,000 feet, is the centre of radiation to the south-west of the Hindu Kush, to the south-east of the Himalaya, to the east of the Kuen Luen, and to the north-east of the Tian Shan and Altai mountains. In the great glaciations of the Pleistocene the Pamirs were wholly beset by ice, which closed all avenues of egress to the northern lowlands and exposed the inner plateaux lying to

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the north and south of the Kuen Luen range to severe dust-storms, covering their surface with loess, through which no other vegetation than steppe grasses could make its way. It is possible that the glaciation of this massif and of its centrifugal ranges may have exerted a determining influence on the early distribution of the undifferentiated stock of modern man, causing a division between an eastern branch, which became established within the central plateau, and a western branch, that was forced to migrate beyond the buttress of the Alai Hills. Some part of the eastern stock appears to have made good a retreat across the Siberian plain to the American continent. Other groups populated the northern and southern plateaux and the belt of forest, that clothed the uneven slopes of the Himalayan and Kuen Luen ranges, and in interglacial phases followed the ascending snow-line far up the mountain-sides. The increasing population and the recurrent glacial contractions of the forest belt created a succession of crises, during which forest-dwellers of the least conservative temperament were periodically attracted to the plateaux, where herds of swiftly moving animals such as the saiga antelope and the horse subsisted on the sparse pasturage.

These first ancestors of the eastern stock sustained various degrees of Mongoloid differentiation. Even the conservative groups that remained faithful to the forest became opaque of skin and deficient in body hair. As recurrent phases of glaciation restricted their habitat and diminished their food supply, their ingenuity was taxed to the full in the exploitation of the material of the earth, wood and fibre that lay ready to hand. They could only exist in small economic groups and became greatly reduced in stature. But these visitations of circumstance were insufficient to transform the original characters either of their head form or of their bodily proportions. When, towards the close of the Pleistocene, the dessication of the plateau completed the defeat of the forest these ancestors of the dwarf races of the Orient migrated to the Yunnan watershed and there,

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taking on negroid characters of skin colour and of the growth and texture of hair, became ancestral to the Andamanese, to the Aeta of the Philippine Islands, and to the Semang of the Malay Peninsula.

Exposure completed the Mongoloid differentiation of the dwellers upon the loess-strewn plateaux. The opaque skin was tanned yellow, the hair of the body remained deficient, that of the scalp underwent archaic specialization reverting to a circular cross section and growing in both sexes coarse, lank and long, like the mane of a horse. In its extreme development this differentiation became not Mongoloid but Mongolian. The head form was greatly reduced in efficiency for mastication. A prominent lower jaw with a well-developed chin and a tendency to prognathism was unbalanced by strong development either of the brows or of the sides of the skull. The face became flattened, the nose concave, the eye-orbits widely separated, the cheek-bones high, prominent and wide. The Mongolian eye, unsheltered by almost hairless brows, is furnished with a short upper lid and distinctive folds at each apex and appears to slant upwards towards the brows. But for the occasional appearance of a thin wispy moustache, the upper lip and chin are characteristically devoid of hair. The expression of the face, which appears to be crushed upwards and outwards, is impassive. It is to be inferred that the Mongolians became long habituated to some diet which exercised the jaws little either in cutting or in grinding and an ingenious hypothesis represents their first progenitors as subsisting on the milk of the horses of the plateaux, absorbed directly from the udder.

This equine hypothesis is of unusual interest. It presumes a human experience that is in more than one respect the most rudimentary of which we can well conceive. Including as essential no single element of material equipment, it in particular excludes the use of fire, of which the horse, amongst the most timid and fleet-footed of gregarious animals, would have been intolerant. Nor does it imply any social organization. It postulates the perpetuation of an

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infantile mode of sustenance. On the other hand, it assumes an extraordinary quietude and courage, without which it would be inconceivable that men should mingle peaceably with a herd of wild horses, and to an equal degree sympathy and tenacity of purpose, without which it would be impossible for them to exploit so strange a supply of food. It has been suggested that the short legs and the poor development of the calf muscles of some Mongoloids and of all Mongolians are to be explained as deriving from the practice of their remote ancestors, who in order to move with the herd, sat tight on horseback between meals. This suggestion implies the exercise of that kind of understanding which in Asia Minor and Europe made the round-headed stock pioneers in the domestication of animals.

Whatever may have been the habits of the first Mongolians they were productive of a well-balanced and versatile capacity. The Chinese, as the most typical of modern Mongolians, may be assumed to be least altered from the original form. Two alternatives of growth in the important feature of cranial capacity have been observed amongst the precocious varieties of great-brained men, that are now extinct. Wadjak, a Javan form, had high cranial elevation without unusual length, Boskop, a very early African type, had average European elevation combined with extreme length. The mixed Cromagnon race, of much later date, combined both features. The modification of the Mongolian head form was without such specialization of the cranium as is found in earlier species of man and in the earliest hunters. The opportunity for the natural growth of the brain was thus unimpaired and development was symmetrical, elevation or doming being accompanied by increase of length. Since mind is a function of brain, it is not surprising to find a symmetrical increase in brain capacity coincident with an all-round development of mental power. The unspecialized Chinese endowment has imaginative efficiency both in the abstract speculations of mathematics and in the practical application of science to

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mechanical inventions. The assiduity of the Chinese in agriculture is matched by their initiative in commerce, their critical judgment in literary composition by their dexterity in manipulative art.

But scanty data are available for the reconstruction of the history of that branch of the Mongolian stock that became ancestral to the Chinese. Many indications point to their passage westwards, and to their temporary reunion with the western stock on the Iranian plateau. Linguistic researches in the earliest Chinese literature show that on their entry into China, which may be dated from about 2,300 B.C., the Chinese possessed a script, a calendar and a theology that are Mesopotamian in character and in part also in vocabulary. They brought with them copper implements and painted pottery, which may have derived from Armenia. Arrived within the confines of the "Middle Kingdom" the Chinese entered upon a long period of unaided self-development, which contrasts with the period of acquisition with which they may be credited in the west. They were there surrounded by other Mongolian peoples, from whom they had nothing to learn, and they came to believe that there were no ideas worth having that were not recorded in their own writings. Finding again opportunity for the qualities of patience and quietude, which had been theirs in their first homeland, they inclined to an intellectual conservatism that was far from unprogressive. Inhabiting chiefly the northern plain they employed their newly acquired efficiencies in agriculture and irrigation for the intensive production of rice, which enabled the northern provinces to support in a climate of continental extremes a high density of population. Thus the necessity for any great expansion of territory was long postponed. The Chinese character is sociable, favouring the aggregation of population in cities and the development of a careful etiquette; clannish, tending to place family above tribal organization and to develop private religious cults at the expense of a more general ritual; unwarlike, depreciating

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the career of the soldier and yielding reluctant countenance to the purposes of imperial ambition. When in the seventh century A.D. the southern provinces were added to the Chinese Empire their occupation was effected not by aggression but by the method of peaceful penetration, which at the present day is characteristic both of the Mongolian and of the European Alpine.

The relief of Western Asia had offered to the western branch of modern man more than one alternative of escape from the Pleistocene glaciations. The mountain backbone of the continent stretched as a forested causeway from the Pamirs to the marine rift of the Bosphorus and Dardanelles. It threw off to the south two spurs, the first from the Armenian centre of Mount Ararat along the western or Zagros escarpment of the Iranian plateau, the second from the eastern Taurus along the Syrian highlands bordering the Mediterranean Sea. North of this causeway retreat was in glacial periods barred by tundra conditions. To the south there was in Khorasan access to the Iranian plateau, and in Khurdistan, between the two southward spurs, entrance to Mesopotamia and Arabia. The retreat of the forest population, of which the proto-Mongoloids had previously formed a part, once initiated was likely to continue until obstructed by a natural obstacle, and it may be assumed that certain groups of conservative constitution made an early, continuous and comparatively rapid retreat along the causeway. As they advanced the route closed behind them. Reaching the gap to the north of the Anti-Taurus range they were confronted with the treeless limestone plateau, girt about with mountains, that occupies the centre of the peninsula of Asia Minor. Around the margin of this, on the lower slopes of the highlands, ran a broad circle of forest. As, however, the glaciation increased in rigour these enveloping ridges, except in the south-west and west, became in their turn ice-capped, and the Axylon plain, which occupies a central depression of the plateau, was swept with loess-bearing winds.

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The western round-heads were thus borne forward to the lake district of the Phrygian foothills, beyond which the land descended in a series of broadening river valleys, flanked by spurs of hills, to terminate in the fertile deltas of the Aegean coast. Here in a district that compared favourably with those occupied by mongoloid foresters and plateaux-dwellers was the probable cradle of the Alpine race. A temperate and equable climate and absence of necessity for change of occupation secured a long period of physical development combined with a minimum modification of bodily form. A comparison of Mongolian and Alpine history suggests that these great stocks may be nearly akin. The neolithic Alpines of Europe made very similar reactions to those which may be attributed to the early Chinese. Within the present century the round-headed populations of Mongolian China, Slavonic Russia and Alpine Germany, have almost simultaneously asserted their natural independence. To the antiquity of 17,000 years, which has been conceded to the Alpine race in Europe, may be added unnumbered years of antecedent history, which possibly go back to the beginning of the Pleistocene.

2

Other first representatives of the western stock, forsaking the causeway, entered the Iranian plateau. The original impetus of this migration may have carried its leading groups forward in wanderings that led beyond the margin of the plateau towards India on the south, and the Arabian landbridge on the west. It is possible that the ancestors of the proto-Australian and Wadjak races were thus deflected eastwards and that those of Boskop man, having reached Africa, turned south along the Great Rift Valley, which conducted them towards the Transvaal and Cape Colony. Of these, the first identified at Talgai, in Queensland, became negroid; the precocious forms discovered at Wadjak and Boskop, while remaining pre-negroid, manifest a strife

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between growth and specialization, which was absent from the childhood of the mongoloid and Alpine stocks. Meanwhile the plateau became the cradle of long-headed races, that in the extreme extension of the second or Mindel glaciation became most closely congregated in the south-west. It was possibly this crisis that caused the ancestors of the severely specialized West African negroes to effect a precipitate retreat to the Guinea Coast. In the long interglacial phase that followed Mindel the southern route became again open, and the ancestors of the pre-negroid Papuo-Tasmanian race may then have wandered eastwards.

The obscurity which envelops the Pleistocene history of the western stocks, that remained sessile in the Phrygian lakeland and on the Iranian plateau, does not lift before the close of the Würmian glaciation, but the early distribution of their derivative races is rather favourable than unfavourable to the supposition that the immense interglacial interval that separated Mindel from Würm was in Asia divided by a minor glaciation in correspondence with that which has in Europe been distinguished as Riss. It is to be assumed that prior to the Würmian glaciation India supported, in addition to descendants from the Papuo-Tasmanian emigrants, vagrant groups representative of the South African race that had originated in the ancestors of Boskop man and that Africa had received two further stocks, of which one, of much earlier arrival, had around the head waters of the Nile in the eastern Sudan become negroid, while the other, of more recent emergence and less altered type, was in occupation of Somaliland and of the Abyssinian highland and is known to us as Aurignacian. Southern Arabia and Lower Mesopotamia may at this time be pictured as thinly populated by hunters who had matured in plateau differentiation and were possibly of Azilian type. Upon the plateau itself a population of similar type was in possession of a superior culture in origin palæolithic but including pottery and, at least in the south and west, progress also in agriculture and in weaving. Towards the north of the plateau culture

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had taken a divergent course that was more clearly mesolithic. Beyond its margin a colony, that was ancestral to the modern Australians, was in occupation of territory near the Caspian Sea.

The distribution of the round-headed stock of Asia Minor had been at least equally extensive. It may be assumed that the vagrancy natural to forest life had in the great interglacial phase, that succeeded Mindel, caused a flow of the population eastwards, which carried certain groups far through the extended forests. Early groups having re-occupied the Pamirs reached the Tian Shan and Altai mountains; thence in a reduction of temperature correspondent with Riss they may have penetrated to Japan. Although the evidence available for determining the origin of the Nordic race is scattered and inconclusive the emergence of the successive types of Brünn, Solutré, and Oban in an order of decreasing specialization points to the probability of its having derived from unfixed representatives rather of the forest than of the plateau stock. The flatland of north-western Turkestan was well suited to become the nursery of a palæolithic culture and was from its proximity to Central Asia convenient for the pursuit and ultimate domestication of the horse. The Moravian centres of Brünn and Predmost reveal the Nordic stock in a specialization of maximum severity, but retaining the forest feature of cranial elevation. This type, which is consistent with exposure when the stock was still highly plastic, may have originated in the second interglacial phase. The less severe specialization that appears at Solutré is such as may have befallen groups that quitted the forest after bodily constitution had become somewhat more mature. The small robust variety of Oban, which is amongst the great-brained types of *Sapiens* remarkably recent, may indicate a yet later emergence after the stock had in the shelter of the forest matured further both in constitutional equipoise and in mental growth.

It may be supposed that a conservative section of the round-headed stock continued to occupy Asia Minor

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throughout the interglacial phase that separated Mindel from Riss. Feet in the forest leave no mark, nor are forest-bearing strata well supplied with chert or flint for conversion into implements by fracture. The first Alpines of Asia Minor, with small need of sling-stones, scrapers, planes and gravers, may have relied mainly on the digging-stick for grubbing, the flat stone for pounding and crushing and shell for cutting. They may be assumed to have made use of fire and of the fallen limbs of trees, to have plaited wattle and to have made progress in basketry. As, however, in the interglacial phase that succeeded Riss the forests advanced on the inner slopes of the mountains, that enveloped the central plateau, this increasing population was likely to expand over a wider area and to establish itself in districts that afforded conditions similar to those of its Phrygian and Carian homelands.

The north-west coast made an early recovery offering for occupation a new lakeland that was on the last stage of the descent into Europe. There was recovery also on the Lycian and Cilician Taurus to the south and on the Bithynian and Pontine Mountains to the north, so that the Alpines in a reflow eastwards reached the Armenian highland, where Ararat stood at the centre of other lakelands which extended to Caucasia to the north and on both sides of the Zagros escarpment to the south. With this reflow may be traced a cultural gradient based on the Phrygian area, the centre of a first departure from the improvidence of savagery towards the intensive production of barbarism. Amongst fruits indigenous to that district were the wild grape, mulberry, fig, olive, apple, plum and cherry. A people subsisting on seasonal supplies of fruits and berries would as population increased become concerned with the problem of storage, solved instinctively by many fruit-eating animals, but stimulating man to a higher exercise of forethought and leading to the construction of a superior kind of store-house. Amongst indigenous grasses of the same district were wild wheat, barley and millet. The

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land on the verge of the forest, especially on the shores of lakes and in the deltas of rivers, was peculiarly favourable to first experiments in agriculture. The primitive digging-stick, whether of wood, bone or antler, is automatically smoothed by friction in use. Hence might arise the suggestion of the utilization of a more durable material, to be shaped by grinding and to be hafted to a handle with string and resin, and the evolution of the prototypes of typical neolithic tools and implements, such as the hammer-stone, rasp, pick, cleaver, adze and axe. The accumulation of definite harvests rendered the safeguarding of supplies more urgent and the Alpines gradually resorted to the construction of platforms, which could be guarded against the approach of enemies. Lake-dwellings, such as that at Maglemose, became a form of habitation distinctive of the Alpine race first in Phrygia, then in Troas, later in Caucasia.

Amongst animals indigenous to the forest was the wild pig. The Greeks preserved a legend as to the economic progress of the peoples of the Near East, distinguishing between an earlier culture, which was that of nut-eating men, and a later culture belonging to meal-eating men, and noted the sacrifice of the forest-ranging pig to the god to whom the gift of grain was ascribed. As the Alpines moved northwards to the district bordering the marine rift they encountered and, through the natural unease of an inferior in association with a greatly superior race, expelled Neanderthaloids of the unaltered type represented at Krapina. Some of their own groups passing into Europe may have been responsible for the intensive industry established in the Laufen oscillation at Drachenloch. The advance of Würm probably set a period to such western migrations. It is not improbable that Alpine groups, retreating towards Phrygia before the deterioration of the climate, may have brought with them the Angora goat, that was native to the Bithynian mountains, the Armenian sheep that was indigenous to the Cilician Taurus, and the plateau dog for the protection of their homes.

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The foresters, however, apparently left behind them in territories neighbouring the Armenian highland, at the base of the peninsula, groups upon whom the more rigorous climate reacted with energizing effect. Some of these passing northward became ancestral to Nordics, whether of the steppe variety discovered at Solutré or of the coastal type, that later at Oban subsisted partly on hunting and partly on fisheries and had domesticated the dog. Others again remaining in Trans-Caucasia became of the modified Alpine type represented in Japan by the Ainu. Yet others, to the south and west, developed into a type distinguished by pronounced doming of the head, superior stature and a prominent convex nose. These Anatolians were subsequently distinguished from the patient, industrious and unambitious foresters by a restless, energetic and masterful temperament. It is to them that in a previous chapter has been ascribed the expulsion of the Spy variety of the Neanderthaloids, the surgical operation performed upon the skull discovered in Galilee and in conjunction with Nordics and Mongolians the origin of the mixed Cromagnon race.

With the development of agriculture in the western lakeland and deltas the Alpines had realized the value of fisheries as a secondary source of food supply; with the development of the lake-dwelling habit they experienced the need of suitable utensils for cooking and to hold liquids and grain. Thence derived early essays in the art of pottery, beginning with the plastering of the outside of baskets with clay that was subsequently baked in the sun or by the domestic hearth. Later processes such as the selection of a superior clay, the admixture of tempering, wetting, moulding, sun-drying, fire-heating, oven-baking, constituted an empiric art which could only have been achieved in the leisure of a well-provided and settled existence and by the exercise of exemplary patience.

When post-Würmian conditions encouraged a further reflow of the Phrygian population eastwards, it was natural

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that the foresters should avail themselves of the pasturage that was afforded by the loam-converted loess of the Axylon Plain. They probably also at this time became acquainted with the mineral wealth of the peninsula which had been exposed by the glacial thaw and included gold, silver, lead, antimony, obsidian, rock-salt and kaolin. Rock-salt, a surface deposit liked by cattle and valuable for cooking, was probably first taken into use. The obsidian, a very hard volcanic glass, capable of conversion by fracture into excellent knives, was of a pale lustrous variety, which was destined to secure important markets. The first supplies of gold and lead were worked into ornaments. It may be supposed that the Alpines gradually added to agriculture and pasturage a mining industry, for which they were in physique and temperament well fitted. The superior constitution of the Anatolians enabled them to assume control over the new industries which they combined with others such as the technique of Solutrean pressure-flaking that they had already assimilated. It is to Anatolian imagination that may most conservatively be ascribed the origin of the practice of fashioning clay figurines for use in a magic designed to promote the fertility of flocks and the discovery of the copper that belonged to the area of Diarbekr which lay to the south-west of their territory. The Alpine reflow possibly acted as a mechanical impact on peoples congregated towards the base of the peninsula ; for to this period belongs the migration from the Caucasian region of many peoples. The severely specialized Nordics passed westwards through the Russian steppe. The ancestors of the Ainu departed eastwards taking with them to Japan the dog and the expert exploitation of fisheries. A culture that included Azilian microliths reached the desert of Gobi, another that included Magdalenian forms became established round the lower waters of the Ob and Yenisei. The Australoid migration passed southwards, the Cromagnon race, after passage through Asia Minor, during which their forest efficiencies were refortified, renewed in the Hungarian

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Plain contact with Nordics, who had passed through the Moravian gateway from Poland.

The earliest-known neolithic settlement from the Iranian plateau was established at Susa, below the Zagros escarpment at a point about a hundred miles to the north-east of the present apex of the Persian Gulf. This colony has on stratigraphical evidence been dated to about 18,000 B.C., an antiquity that has been questioned, but is consistent with the general history of the Iranian plateau, which about that date may be assumed to have been disturbed by the southward migration of the Australoids, and with the immensely long periods traditionally ascribed to the earliest chieftains of Mesopotamia. The composite equipment of the first settlement of Susa supplies many indications of Anatolian activity along the western margin of the plateau. The stone implements, whether of local flint or of imported obsidian, were occasionally finished with the Solutrean technique of pressure-flaking. The population subsisted mainly by hunting, but partly also by the cultivation of wheat from Asia Minor. Hand-mirrors and many small ornaments of copper provide evidence of trade with Diarbekr. The refined pottery discovered on this site was manufactured with the aid of a hand-turned wheel, an invention that may have been native to the plateau and probably represents a long period of development. It was painted in black lustrous monochrome with a pigment compounded of perhaps three separate ingredients. The characteristic decoration was also of plateau origin, for it was based on leatherwork. A northern influence is, however, indicated by less frequent basketry designs; thence may have also derived the occasional animal themes, that include the horse and the dog, but tend to become conventionalized beyond the possibility of identification.

It is already known that the first settlement of Susa was but one of many agricultural colonies that extended northwards in the direction of Baghdad and to Ur and Eridu on the north-western shore of the Persian Gulf. Nor would it

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be surprising should the lowlands that border the north of the Sea of Oman and the east of the Gulf afford evidence of contemporary settlements effected by other tribes, that in a southern emergence from the plateau had in passage through Baluchistan domesticated the ox. Peoples of this migration appear to have crossed into southern Arabia, dislodging the Azilian population, and to have penetrated northwards along the Red Sea littoral to become in Lower Egypt and Palestine ancestral to sections of the Mediterranean race. It is to this movement that has been ascribed the retreat of the Aurignacians from Abyssinia in the directions of Tunis and Syria.

Nor is it beyond reasonable conjecture to suppose this migration to have been closely succeeded by two other waves of the same plateau stocks. Of these the first, having acquired the camel and the ass, became in the interior of the peninsula nomads of the type known to history as Semites; the second, having in addition oxen, became established on either side of the Arabian landbridge as first Hamites.

The initiative, that had conveyed northern grains and copper to the settlements of Mesopotamia, Zagros and the Gulf, found a new outlet amongst the peoples of the Mediterranean coast. The copper district of Diarbekr was duplicated westwards in Syria, whence a forested causeway led south to the Sinaitic peninsula, a region that contained the copper ore known as malachite and turquoise. To the south-west the Nubian desert was rich in surface gold. The settlements first discovered at Badari, near Assiut, and subsequently in the Fayum district of Lower Egypt come next in antiquity to the first Susan settlement and have on stratigraphical evidence been dated to about 12,000 B.C. The Badarian culture was probably like that of Susa composite. The feature that may with most security be regarded as indigenous is supplied by numerous flint arrowheads with a deeply notched base. Amongst elements more clearly intrusive are superior pottery, which like that of

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Susa was wheel made, and a remarkable assemblage of traits including underground granaries, boat-shaped basketry, a copper awl and beads, human figurines and a vase in ivory, slate palettes and a number of oval flints, finished with pressure flaking, that may on Magdalenian and Australian analogy be supposed to have been modified bull-roarers belonging to the same fertility cult as the figurines. Of two specimens of the latter one is broad, high and short-headed with a massive nose, the other has been assumed to represent a subject of some other race. Although there is at present available no skeletal evidence for determining the race of the Badarians it is within reasonable conjecture to assume that they were Mediterraneans, possibly of the Azilian type, in possession of an equipment that was mainly of Anatolian introduction.

The earliest-known centre of neolithic culture to the north of the Iranian plateau is the important settlement at Anau, situated below the escarpment some 300 miles to the south-east of the Caspian Sea, and about 20 miles distant from Askabad. Stratigraphical determination has here indicated an occupation extending from before 8,000 to 2,200 B.C. and distinguished by progressive appropriations from distinct cultures without satisfactory evidence of racial succession. The first colonists, who may be assumed to have arrived with flint implements of Azilian type and personal ornaments worked in turquoise, were probably hunters of the plateau stock, who had long lost contact with the south-western peoples. There is no indication that they at first possessed domesticated animals; the hand-made pottery which they manufactured in great quantities lacked the refinement of texture and shape that is conspicuous in the ware of Susa and Badari. The potters of Anau, however, greatly surpassed those of Susa in the preparation of pigments and in addition to black possessed a second, that was brown, and a third, that was violet. With these they produced painted designs that were rarely in imitation of leatherwork and for the most part derived from basketry. Of this

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ornamentation some designs have been described as geometrical, others symbolical. One shard was decorated with the realistic treatment of a plant that may represent wild barley.

In its full development the first settlement of Anau occupied an area of from five to ten acres covered with rectangular habitations of sun-dried brick, that were possibly roofed with timber. This roofing, as also the agriculture which had largely supplemented the products of the chase, may have derived from contact with Alpines. To the same source may perhaps be traced the later practice of burying children under habitation floors, which recalls the burials of children under the shell-mounds of the Azilian centre at Mugem. Contact with Anatolians may be assumed from the many motives of the decorated pottery, from the acquisition of ornaments in lead from Asia Minor and in copper from Diarbekr and from the possession of mace heads ground out of hard stone, which resemble those discovered in Mesopotamia, Crete and Egypt. To this influence travelling along the western and northern escarpments of the plateau may, though with less certainty, be attributed the art of weaving and the baking of bricks both of which may have derived from Mesopotamia. In the final phase of their first settlement, which may synchronize with the Ancyclus period of the Baltic, the men of Anau were afflicted with drought. They therefore apparently forsook agriculture and becoming marauders liberally supplied with copper daggers and with sling stones acquired the dog, the pig, and two kinds of sheep from the forest, the horse from the steppe, the ox from Mesopotamia and the camel from the Syrian desert. Later, when towards the close of the sixth millenium Semitic hordes were moving north towards Baghdad, the Anau settlement was during another prolonged drought for a time abandoned. When it was re-established on a new site the colony was still more wealthy and more warlike. Increase of Anatolian contact is apparent in pottery, a seal stone of Syrian design, sickles, lance-heads, and arrowheads of copper, clay figurines of women, oxen and carts.

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The common element of Anatolian influence, that brings the distant sites of Susa, Badari and Anau within the possibility of a single survey, extended from Diarbekr to the Persian Gulf and from Zagros to the Mediterranean. Within these boundaries lies the region that takes precedence of all others as the birthplace of civilized institutions and of the Christian religion. To the historian this priority is obvious not only in the development and diffusion of culture but also in the character of its records. For the lands watered by the Tigris and Euphrates have supplied in addition to the earliest known inscriptions, in which legend almost insensibly gives place to chronicle, a second form of memorial, by means of pictographs celebrating contemporary events, which connects closely with other material executed in stone and metal and thus serves as commentary on individual, social and religious values. Taken as a whole this body of records conveys the impression of an unusual sense of the continuity of the present with the past and, in particular, goes far towards redeeming folk-lore from the imputation of being merely fabulous. The most widely diffused of all oral traditions are those which were, in the latter half of the sixth century, edited in Babylonia by Hebrew priests and occupy the first eleven chapters of Genesis. The compilers constructed their narrative from two distinct sources, each of which derived finally from a Mesopotamian origin. That which was earlier had already been committed to writing in Palestine some three hundred years previously. The later source, which controls the whole account, was the work of the editors themselves, who can hardly be supposed to have been negligent of the traditions which they found current around them. Although the completed work contains many discrepancies of statement, which reflect its dual origin, these may with justice be regarded rather as increasing than as detracting from the value of a summary which the writers endeavoured to render convincing by the use of a plural noun in references to God and the attempt to fix dates by the quotation of minute genealogies. Their

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purpose was to set forth with legal precision the progress in divine revelation that had led to the establishment of their own patriotic cult of Yarweh worship. To this end it was important both that they should reconstruct the local atmosphere, which they maintained as background to their succeeding account of the patriarchate, and preserve the sequence of far-distant events as credited by their Babylonian contemporaries.

The Biblical narrative relates how the first parents, tempted to acquire forbidden knowledge through the wiles of the serpent, were expelled from the home of their origin under a curse that condemned man to till the soil. This expulsion was followed by strife between the sons of Adam, in which Abel, the herdsman, was slain. Cain, the cultivator, then built a city and became progenitor to a long line of descendants, who attained to fabulous age. Lamech, whose name appears late in this genealogy, is represented as the father of several sons; of these one became pastoral, another a musician and a third an artificer in metal. His period was distinguished by the appearance of a race of great stature and of the sons of God, who mating with the daughters of men begat men of renown. Upon this society, by reason of its religious infidelity, came a great plague of waters from which Noah, a son of Lamech, found safety for himself and his family, by constructing a boat of timber caulked with pitch and furnished with a covered deck. Into this vessel he collected pairs of all animals and so travelled northwards to Ararat, where the boat came to rest. In order to ascertain how far the Flood had abated Noah despatched a raven and a dove. Having by this means ascertained that the land was again exposed, he in due course released the animals. Noah then received the promise that seed time and harvest should not again fail and was told to associate this assurance with the visible sign of the rainbow. He subsequently devoted his energies to husbandry and planted a vineyard. Later the sons of Noah and a population of like speech undertook, in the still-

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sodden plain of Shinar, a building of baked brick that was called Babel, or the gateway of the gods. This enterprise was interrupted by a confusion of languages followed by a dispersion. Of the descendants of Noah, through his son Ham and grandson Cush, Nimrod became a mighty hunter and founder of cities, ruling over Babel, Erech and Accad. Thence was subsequently established on the upper Tigris the city of Asshur, so named after its founder.

It is possible to adopt a middle course between the wholesale rejection or acceptance of this legendary sequence of events. It is for instance by no means unlikely that the establishment of the first Susan culture was followed by an advance of pastoral tribes along the eastern shore of the Persian Gulf and that these, although at first repelled by the settled agricultural colonies, eventually established themselves in association with the cultivators and the metal-working Anatolians. Thus the land of Lower Mesopotamia would come to support a population prone to mixed marriages and to a fusion of religious cults. The original religion in the tidal waters of the great rivers was perhaps that of moon worship with subsidiary stellar deities. To this the pastoral tribes may have added serpent worship and the Anatolians their own fertility cult with applications partly for the increase of their own race and partly also for that of the pastoral and agricultural industries. This period was terminated by prolonged inundations that caused the evacuation of Susa and of the settlements of the Gulf and put an end to the further influx of the pastoral peoples. We may from subsequent history credit the Anatolians with early progress in boat construction and navigation on the waters of the Gulf, nor is it improbable that the inundation would have caused them to retreat northwards in the direction of Ararat taking with them animals of southern domestication. Such a retreat may have facilitated the acquisition of pastoral wealth that appears in the second period of the settlement at Anau. Again, it is reasonable to suppose that the inundation may have locally discredited

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moon worship in the north to the extent of leading to a parallel or superior recognition of a Sun god, the revivifier of the earth, having as his visible sign the rainbow or winged beings, such as birds or insects.

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The main body of the southern population was, however, less likely to forsake the great rivers and probably became established in the central plain above Baghdad, which was subsequently known as Akkad. This area may be supposed to have supported a conservative population, which the twin river boundaries and the exposure of its western frontier to the hostile attack of nomadic Semites rendered compact. Anatolians from the north discovering in this population a separate sphere of influence may have contributed to its unification, introducing, perhaps, the worship of the Sun god with a bird emblem and their own ancestral fertility cult. The Biblical account of the history of the sons of Noah may be regarded as both confused and condensed. Immigrants from the north may indeed have entered a territory of homogeneous speech ; but this is more likely to have been Akkad than the delta area of Sumer, which is in Genesis called Shinar. They may there have participated in building operations ; but the intrusion of new languages was probably a much later event, which occurred in Sumer. The men of the plain may have been ruled by an autocracy centred at Kish, some 50 miles above Baghdad. The exploits of Nimrod, son of Cush, which belong also to Mesopotamian tradition, probably embrace those of a succession of legendary heroes. Of these some may have engaged in hostilities with the nomads of the west, whilst others as population increased made adventurous foundations of settlements beyond the plain, being thereto assisted by their own tutelary deities. It is possible that the foundation of Asshur or Assur was very early, for the name is that of the first patron deity of Assyria and, signifying

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either Holy One or Lord of Hosts, appears to represent a conservative retention of the ancient moon and star worship.

Other adventurers having made their way to the north-eastern head of the Persian Gulf may have thence penetrated along its eastern shore to Baluchistan before the southern peoples began in their turn to reflow northwards. Such a movement of a military and non-pastoral band of emigrants in possession of a cult of sky worship may account for the ancestry of the dynastic Egyptians, which in the Theban area dates back to perhaps as early as 5,000 B.C. Mesopotamian inscriptions, whilst immensely magnifying the antiquity of the Flood, provide an apparently authentic list of 35 kings, who between 4,400 and 3,750 B.C. ruled first at Kish and subsequently at Erech on the western Gulf head. Although each of these two series of sovereigns is usually referred to as a dynasty this term cannot be accepted as signifying unbroken succession and, even if it be in a wide sense applicable to the monarchical institutions of the northern plain, is apt to be misleading in the case of the cities of the Gulf, which appear normally to have existed as autonomous colonies under the rule of the patesi or high priests of local deities. The relations between the southern settlements were not always pacific. When some patesi succeeded in extending his influence beyond the borders of his own settlement, his diplomacy or prowess attested the superiority of the god of whom he was the vicegerent. Were his success considerable he might assume the title of lugal, and bequeath this office to his son, so as to cause it to remain for a few generations hereditary within his family. The inscriptions attribute the foundation of Erech to the grandson of a priest who claimed descent from a Sun god bearing the Semitic name of Shamash. The son of this priest was a warrior who penetrated, as may be supposed, from Akkad, to the sea, that is to say to the Gulf, and to the mountains, or Zagros. His grandson having built Erech became king there in his father's lifetime.

Meanwhile, the ancient site of Susa was about 4,000 B.C.

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resettled and became a centre in the district, which subsequently achieved a distinct national entity as Elam. The pottery of the new settlement displays a preference for gourd-shaped contours and was of northern provenance, for the same ware has been discovered at the Akkadian station of Jemdet Nasr to the north-east of Kish, and in ruder form in the Anatolian district of Cappadocia. A form of drinking vessel furnished with a flat base, a waisted neck and a long oblique spout has representation both in the earliest Minoan civilization of Crete and in the pre-Inca period of Peru. The pottery of Susa was decorated with motives painted with red and black pigments and based on an elaboration of basketry designs with which were combined the realistic treatment of plants, animals, birds and fish. One authority associates this ware with a race that wore its hair in pigtailed and may possibly be that of the Mongolian ancestors of the Chinese. The fish motive may represent a southern cult, that had developed out of serpent worship at the time of the inundation and was sacred to an ancestral being half man and half fish. The maritime habits of the composite Elamite population may be assumed to have had Anatolian origin.

The resettlement of Susa appears to have been followed by a renewed immigration of the pastoral people, who arriving early in the dynasty of Erech brought with them southern arts of irrigation and drainage, stonework, the decoration of objects by means of inlay, an agglutinative form of speech and the practice of erecting pictographic memorials. This extensive immigration skirting the head of the Gulf reached the north-western centre of Ur and, probably with Anatolian assistance, effected great modifications in the local culture to which it imparted its own language. About the middle of the fourth millennium the Mesopotamian region may thus be regarded as divided amongst three distinct peoples. The Akkadians of the north with a Semitic hinterland westwards, the Elamites of Zagros with a hinterland eastwards over the plateau, and the Sumerians of the delta with contacts partly westwards towards the desert but

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more distinctively south-eastwards in the direction of Baluchistan. It is to Sumer that we should naturally look for the confusion of languages that in the Biblical narrative is erroneously attributed to the building of Babel in Akkad.

The progress of Ur to suzerainty in succession to Erech is illustrated by the recently discovered tombs of early Sumerian sovereigns. These sepulchres testify to the rapid expansion of treasure, workmanship and social organization and leave the impression of a culture continually refreshed by accessions from a south-eastern homeland, where it had matured under conditions favourable to plutocratic development. The recency of its introduction to the neighbourhood of the Gulf may account for its imperfect assimilation by the natives of that area, who appear to have retaliated against a tyrannous regime by acts of sacrilegious spoliation.

The first of these tombs was constructed in two chambers built of great imported blocks of limestone with walls more than three feet thick and a roof of corbelled stone-vaulting, that rested on wooden beams. Of the two chambers the first was vestibular and had been the scene of human sacrifice, the second was sepulchral ; both had been looted. A second royal tomb, probably of later construction, consisted of an upper grave shaft leading by means of a ramp to a stone-walled and vaulted chamber, that lay below it. An arched doorway in one of the walls gave access to the sepulchre, which was roofed with brick arches and terminated in an apse, where the roofing took the form of a half-dome. The outer chamber contained the skeletons of fifty persons, who had been sacrificed to attend the royal ghost. Of these eleven were ladies of the harem, adorned with head-dresses of gold ribbon and with gold ear-rings and supplied with vessels to hold face-paint and unguents ; others were men with daggers on their hips who had been laid out in an orderly row. Two four-wheeled ox-wagons, with solid wooden wheels, leather tyres and copper axle-bands, had been backed down the ramp, at the foot of which their teams of three oxen, the grooms at their heads

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and the drivers on the seats had been slain. Upon the ramp lay the skeletons of six guards with shouldered spears and wearing helmets of copper. The tomb had been spoiled and the body of the king removed from the sepulchre, but the looters had left the two-foot model of a rowing-boat of slender lines, with raised prow and stern, a central awning and a pair of leaf-shaped oars resting across the gunwale opposite each of the six benches for rowers. Above the bodies of the women of the harem stood two wooden statues of bulls with metal heads, the one of copper and the other of gold and both with inlaid eyes. Here were also found the silver muzzle rings, collars, reins, pole-ring and bull emblem of the wagon harness.

It has been conjectured that the robbers of the king's sepulchre were workmen employed on the tomb of his consort Queen Shub-ad, who was buried later in a sepulchre of stone with a brick arched roof that had been excavated at the side of the sacrificial chamber of the king. This undisturbed burial showed that the queen's body had been deposited upon a wooden bier with slaughtered attendants at its head and foot. The sepulchre had been fitted with wooden shelves to support the queen's more intimate possessions. Amongst these was her crown made of gold and lapis beads sewn on to a leather cap and further adorned with miniature figures in gold of leaves, flowers, and fruit and of animals in pairs. Her body had been invested in a robe of gold, lapis, carnelian and agate beads ; her head-dress was of gold ribbon surmounted by a gold comb terminating in spikes bearing flowers worked in gold. In this second burial the upper grave shaft had been utilized both as a sacrificial chamber and as a depository for the accessories of retinue and state. These comprised the royal harp and harpist ; chariot, asses, and grooms ; wardrobe and its attendant ; women, gaming-board, and dice, sceptre, vessels and tools in stone, copper, silver and gold. Many of the details of this subsidiary furniture afford an important commentary on the character of the south-eastern culture.

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The keys of the harp were copper nails with large gilt heads ; its base was boat-shaped ; its front, inlaid with shell plaques engraved with mythological scenes coloured with red and black, was surmounted with a large calf's head in gold, with a top knot and curled beard carved in lapis and shell and with inlaid eyes. The chariot was decorated with gold heads of bulls and lions worked with a formality that suggests that these themes had long been in use ; but the rein-ring on its pole bore the model of an ass treated so realistically that the study may have been novel and designed to serve rather as a mascot than as a cult symbol.

In the period of suzerainty, when its dynasty had become supreme in Sumer, Ur possessed a great temple built of bricks with rounded faces that rested on masonry of imported limestone. This edifice was adorned with wooden pillars, covered with bitumen and inlaid with red sandstone, black paste and mother-of-pearl, and with a frieze representing the dairying industry. Its entrance was flanked with figures of bulls and lions cast in copper and of the same formality as had distinguished the workmanship of these themes some centuries before upon the chariot of the royal tomb. It is possible that Sumerian culture had already passed its zenith before the delta of the Nile was invaded by the relatively barbarous sky worshippers.

The first dynasty of Ur came to an end owing to an invasion from the east on the part of the Elamites. These were about 3,500 B.C. expelled by the Akkadians, who then set up a second dynasty of Kish. There followed a troubled period during which the Elamites and Akkadians were with varying success protagonists and an eastern centre of hostilities appears to have left the cities of the Gulf free to pursue an autonomous development. It seems that first Erech, then Ur and subsequently Lagash enjoyed periods of local suzerainty. According to the inscriptions the elevation of the last city in about 3,200 B.C. in some measure repeated the antecedents of the first dynasty of Erech. It appears that Mesilim of Kish having intervened in the

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affairs of Sumer redefined the territories of the cities of Umma and Lagash. He built a temple to Nin-Girsu the patron deity of the latter, and to him dedicated a mace-head carved with the cult symbols of the northern hawk and of the southern lion. Within two recesses of the wall of this temple stood statues of women modelled in copper and with hands folded in the attitude of prayer; the material, workmanship and theme of these statues testify to the unflagging application of the Anatolians to each successive occasion that the vicissitudes of conquest and religion provided for commerce.

The next intruders into Sumer appear to have been illiterate Semitic chiefs, from a north-western area described as Maer. Although these kings seem for a time to have held suzerainty over the whole of Sumer, their dependence on the assistance of Sumerians as scribes and local officials may have so minimized their actual authority over the superior civilization of the Gulf head, that individual cities experienced little difficulty in regaining their normal autonomy. Thus it seems that about 3,000 B.C. Lagash was ruled by an independent patesi named Ur-nina, who reigned prosperously and devoted himself to works of piety and irrigation. He surrounded himself with a ceremonial court and was the father of seven sons and one daughter. All occupied positions of prominence, but special privileges attached to the crown prince and ritual was delegated to a High Priest, who was also a musician and had power over demons and disease. Ur-nina imported foreign timber for building and surrounded Lagash with a wall; he caused canals to be dug and constructed reservoirs; he set up sculptured statues to deities and built temples to Nina, goddess of irrigation, to Gatumdug, patroness of childbirth and of healing, and to her consort. He was succeeded by his son and grandson; the latter of these was a successful warrior, who became lugal and set up a memorial pillar, in which he is represented as leading his followers to battle in a solid phalanx. The enemy appears caught in a net and

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devoured by vultures. At the end of this stele the lugal is shown smiting the king of Kish in the face with a spear. Later remains at Lagash have provided the historically important combination of the symbols of the Elamite fish and of the northern hawk.

It has already been suggested that the constant and increasing market for metal in Mesopotamia had probably induced the Anatolians to enter into a very early occupation of northern Syria, where the mines were possibly worked by imported Alpine labour. Of the produce it may be supposed that the greater part was exported, but that a remainder, set aside for industrial purposes, was manufactured into hatchets, awls and nails. In order to give to pottery some of the beauty of copper the Anatolians in this northern centre employed a clay containing iron oxides. This, when kiln-baked, gained a brick-red surface; it was then burnished and incised with geometrical patterns picked out with a white filling.

The industrialization of Syria had taxed Anatolian initiative to the full. For this area was in 12,000 B.C., no less than northern Egypt, an asylum of the Mediterranean race, but differed from the African centre in suffering from over-population. Not only was the northern coast exposed to a continual pressure owing to the advance of Semitic tribesmen, but this congestion was augmented so often as drought upon the steppe, such as at least twice intervened to modify or suspend the settlement at Anau, brought representatives of the plateau westwards through Diarbekr. The outlet for the surplus population which led along the coast, came to an end in a cul-de-sac formed by the intersection of the Cilician Mountains with the north and south buttress of the Taurus chain. This situation was unfavourable to the undisturbed exploitation both of the copper-mines of the Syrian causeway and of the deposits of silver contained in the Cilician highland. It was therefore urgent that another direction of expansion should be created; geographical conditions dictated that this must be west-

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wards and by sea ; such a passage demanded an adequate form of transport. Fortunately the Anatolians had from recent experience in Egypt acquaintance both with the temperament of the Mediterranean race and with the possibilities of transport by water. They had also in the cedar of the Syrian forests, in the fibres there available for cordage and for textiles, in the Azilian saw, the copper hatchet, awl and nail, accessories far more serviceable for the development of the art of boat construction than had been at their disposal on the Nile.

The earliest type of boat known to have existed in Egypt is depicted in a very early cliff engraving at el-Kab, fifty miles above Luxor. This vessel, which appears to have been constructed of reeds bound together with raised ends and unlike the catamarans of the Papuo-Tasmanian equipment rendered water-tight by caulking, was suited only for use on the river and on lakes. As such it probably remained for long the typical craft of the native Egyptians, for it is reflected both in the Badarian basketry discovered in the Fayum and in the ark of bullrushes, in which it is said that the mother of Moses concealed her infant son from the persecution that followed the expulsion of the Semitic Hyksos in the sixteenth century B.C. The coming of the dynastic Egyptians early in the fifth millennium had, however, driven from the Theban area of Upper Egypt a much more efficient type of vessel, which, though possibly a development from the native reed boat, involved for its construction a technique more in harmony with the boat in which Noah is said to have escaped from the Persian Gulf towards Ararat. These boats were apparently built out of split planks fixed together with pins either of wood or of metal and were fitted for sailing with a mast of double or tripod form, sometimes also with decks. Although navigated on the Nile it is clear that they were employed in trade between the delta and Crete. Having expelled the Mediterraneans from Upper Egypt the southern invaders in their second dynasty made appropriations from the local

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culture of the delta, where Anatolian influence, if not actually predominant, was at that time strong. A Pharaoh of the third dynasty is said to have despatched to Syria a fleet of forty vessels to bring back baulks of cedar from Lebanon. The evidence thus points to some part of the region of Anatolian influence as the centre of origin of the plank-built sailing-vessel. At so early a date it appears more likely that this was on the Syrian coast than on the Persian Gulf.

The Mediterranean settlements that in the twelfth millennium spread rapidly over the southern coasts and islands of the Aegean Sea, may then, perhaps, be explained as due to a migration from Syria that had been intentionally expedited through the provision of seaworthy craft. The first colonies were probably tentative and ill-provided. Cyprus was populated either from Syria or from the sea plain of Adalia beyond the Cilician silver mines; Crete was of easy approach from a second sea plain, sheltered by the Mindares spur of the Carian highland, whence between Samos and Cos the Sporades stretched in a continuous chain that seldom deprived seafarers of the sight of land. The earliest culture of Crete, which has on stratigraphical evidence been dated from between 12,000 and 11,000 B.C., included agriculture, pasturage, hunting and fishing; rectangular dwellings of undressed stone, which were probably roofed with timber, combined with less pretentious erections of wattle covered with clay and constructed over stone floors below which children were buried; coarse pottery; weaving; tools of stone, bone and horn. This combination indicates not only a population compacted from various antecedents, but a tradition which is rather that of the northern escarpment of the plateau than of Mesopotamia. The Anatolian navigators may have considered themselves repaid, when they discovered that Cyprus contained exceptionally rich deposits of copper for export to their Mesopotamian markets. It does not appear to have been within their immediate outlook to despatch wealth of so high a value westwards.

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The enterprise of the navigators was not, however, confined to colonization in home waters, nor did it neglect a Mediterranean trade designed to supply the necessities of the colonists. They accordingly exported from Asia Minor supplies of obsidian which were in Crete manufactured into arrowheads, knives and razors ; they discovered in Melos, one of the Cyclades, a second variety that was black and lustrous and traded this widely in the Aegean, to Crete and as far west as Matera in the Taranto district of southern Italy ; in the Lipari Islands, the Pontine Archipelago and Sardinia they found a third variety that was also black, but of inferior quality, and conveyed this to the Italian mainland. The progress of the colonization of the northern coasts of the Mediterranean may be gauged by the appearance of the Mediterranean race at Campigny in the sixth millennium B.C. Meanwhile boat-building and navigation had sufficiently developed to secure contacts between Crete and the Mediterranean population of Lower Egypt which may equally date from the sixth millennium. The traffic between these centres appears to have set flowing supplies of Syrian and Cyprian copper in ships that may most conservatively be supposed to have been of northern construction and probably carried sails. These maritime activities occupied in the eastern Mediterranean a considerable population known to the dynastic Egyptians as Keftiu, or peoples of the sea, a term that in a more confined sense was particularly applicable to the Cretans. From a more northerly centre on the coast of Asia Minor the Anatolians in the fourth millennium established a considerable traffic in their red ware along the Danube.

The importance to the Anatolians of these contacts with the Mediterranean colonies and with the mixed population of Aurignacian and Alpine antecedents that occupied the area of the middle and lower Danube was, however, overshadowed by more intimate contacts with the Mesopotamian area that provided the main market for metals. This had been by no means weakened by the growth of Semitic

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influence in Akkad, for the Semites were apt pupils in commerce, who were destined to succeed the Anatolians in the carrying trade of the Aegean and Mediterranean seas and of the Persian Gulf. Moreover, the clearance of the excess population of Syria westwards had probably been succeeded by closer contacts between the Anatolians and the tribesmen of Palestine, whence it is possible that the latter had through intermarriage acquired Anatolian characters, in particular a tendency to obesity and the non-original feature of a prominent, wide-nostrilled and fleshy nose. The dependence of Maer sovereigns on the progressive Sumerian culture was probably duplicated in the northern area, where the Anatolians, constantly concerned to secure an atmosphere congenial to trade, were in the position to act as intermediaries between victorious desert tribes and the long-established institutions of the Akkadian monarchy.

CHAPTER VI

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I

THE commercial enterprise of the Anatolians was not shared by the conservative Alpines, who continued to belong to the early neolithic culture, and still in part relied on the seasonal harvests of wild fruits. The belt of commerce that extended from Susa to Matera touched the Alpines chiefly as providing them with uncongenial employment as miners in the Taurus, Syria and Cyprus; the settlement of the coast with Mediterraneans threatened to deprive them of their most fertile holdings. In order to secure their placid and autonomous existence they moved in increasing numbers northwards and before 4,000 B.C. many Alpines had started across the marine rift in a great migration into Central Europe.

The moderate progress made by the Alpines at the time of their departure from Asia Minor is recorded in the remains of the first city of Hissarlik in Troas, which dates from the latter half of the fourth millennium B.C. The houses of this settlement were built on foundations of small stones with a superstructure of crude brick. Copper was rare, and the pottery, wholly lacking in the red ware manufactured in imitation of copper, consisted of hand-made gourd-like shapes smoked by baking in open ovens to a dense black and decorated with geometrical patterns in white paste. In their migrations the Alpines recapitulated the history of the retreat from the Pamirs. There is repetition of the contrast between conservative groups that, clinging to the cause-

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ways, remained foresters and of other groups that forsook the causeways for the flatland. The mountain route followed the heights that bordered the south of the Roumanian, Hungarian, Moravian and Bavarian plains. On reaching the district of Lake Constance it divided, pursuing to the north the line of the Jura, Vosges and Ardennes, and in the south encircling the Swiss lakeland to pass Lakes Neuchâtel and Geneva. Savoy was perhaps the terminus of this migration. The groups that left the causeway entered the loess plains to the north, in which, as the climate became less humid and the rainfall more seasonal, the forest had tended to break up into parkland, meadow and open pasturage. They established themselves in Hungary and Bavaria. From the former centre they penetrated through the Moravian Gate into the northern plain and westwards to the Rhine.

The highlanders do not seem to have diverged south either to follow the valley of the Save or to enter Italy. As they made their way westwards they lacked opportunity for agriculture and of domestic animals could transport with them only the dog. They were vagrants who had temporarily reverted to subsistence on the wild products of the forest, fruits, tubers and such animals as they could trap for their pelts and flesh. Forced by these meagre supplies to divide up in small groups their native sociability was in abeyance. They had little leisure for grinding stone or for making pottery, nor could they afford to burden themselves with impedimenta. Their implements were mainly of wood and horn, their ornaments of the foot bones or perforated teeth of animals. As weariness or the increase of numbers forced them to seek a place for permanent settlement they established themselves on the sunny shore of some lake, preferably near the head, or on the banks of a river, or on swampy ground, where the hills protected them from storms, and more abundant light warned them of the approach of intruders.

The remains of dwellings discovered at Waulwyl, a little

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lake to the west of the lake of Zug, represent the earliest European stage of the Alpine settlements. The site occupied was the surface of an old lake-bottom. Upon a bed of shell marl had been laid, for protection from damp, small platforms consisting of five successive layers of roughly cut stakes, set transversely, with intervening layers of branches and brushwood mixed with clay. Each platform was a separate structure, with an area not exceeding ten to twelve square yards, and was pinned together by vertical poles, which were congregated more closely at the corners. The absence of any vestige of the habitations that had once been constructed on the platforms is compensated by the record contained within the peat, which the rapid decay of timber, brushwood, lichens and mosses, had produced. This medium, rich in preservative agents, had constantly gained on the platforms necessitating four complete renewals and reducing their total thickness to three feet; finally it had risen above them to an equal height. The relic bed thus formed contained fractured flints, knives of yew, harpoons of staghorn, points and chisels of bone, a lump of asphalt, crude pottery, flax heckles of bone, objects of perforated stone, ground stone axe-heads, or celts, socketed in staghorn for hafting to a branched wooden handle, an equipment such as the Alpines may be supposed to have possessed long previously in the south-west of the Asiatic peninsula. The settlement had begun to trade, for some of the celts were of nephrite, a non-local form of jade.

Few localities were more favourable for the settlement of the foresters than the historic region of Lake Constance, and in particular its western area, where the hills descend in gentle slopes, covered with forests of pine and oak, to a rich tract of arable and pasture land. This in turn gives way to a belt of marl stretching along the shore of the lake; the shore itself is broken by pleasant bays with gravel bottoms. Communications are open northward to the Danube and north-westward to the Neckar and the Rhine. The importance of these communications appears in the station of

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Schussenried situated on the Federsee in Württemberg, where the colonists possessed pottery with ornament that derived from the Danube. Organic remains at Schussenried showed that the stag, roe, bear, wolf, fox, lynx, hare and bison were hunted, and that the dog, pig, sheep and short-horned ox, the second and third probably, the fourth certainly of imported breeds, were under domestication.

Progress was more rapid in the flatland, where the retreat of the forest was continually exposing new holdings for occupation, and where the peaceful penetration of new Alpine settlers had been not unwelcome, because they were in possession of superior methods of cultivation and served as a channel for the importation of the seeds of wheat, barley, flax and millet, of new breeds of domestic animals and of the red ware of Anatolian invention. Hence arose on the Hungarian plain the typical Danubian culture, which was both agricultural and pastoral and gradually pervaded the plains of the west and north. The characteristic implements were hoe and adze heads made from oval or cylindrical pebbles of hard stone, unsuitable for fracture. These were split and ground flat on one side for hafting transversely to wooden handles; in skilled use such a hoe was self-sharpening. The associated pottery was derived from the gourd-like form of Asia Minor and was either black or red. In either case it was before baking incised with geometrical patterns, either rectilinear or spiral, applied in compact arrangement and without consideration of the form of the vessel, and is in consequence described either as "banded" or as "free-field." In the final processes of manufacture the vessels were burnished and the decoration was picked out with white clay.

The invasions of agricultural and pastoral Alpines from Troas were succeeded, on the causeways to the north-east and south of the Hungarian plain, by the establishment of Anatolian colonies which stimulated the plainsfolk to industrial and commercial activity. One of these colonies was founded by prospectors, who ascending the valleys of the

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Save and Drina, had established a pit-dwelling community at Butmir to the east of Sarajevo, Bosnia. This Bosnian settlement was later connected with a settlement on fascine foundations, resembling those of Waulwyl, which was situated on a bog near Laibach. Another colony of Anatolians traversing the causeway of the Styrian Mountains and of the western Carpathians had occupied Galicia with a centre at Tripolje in the neighbourhood of Kiev, where the settlement was also formed of pit dwellings. The Anatolians of Butmir and Tripolje arrived with copper ornaments and moulded female figurines in clay. Each centre produced a distinctive type of Danubian ware in quantities in excess of local needs. The Bosnian potters excelled in refinement of design, executing admirable spirals; those of Laibach subsequently specialized in the use of the circle as ornament. It is possible that this settlement received artistic stimulus from the Mediterranean population of the Adriatic. In the Galician centre pottery was produced in vast quantities and with inferior attention to neatness of design; the potters of Tripolje used several pigments and borrowed their motives from basketry and leatherwork. There is considerable ground for supposing that they were influenced from Anau. In 3,200 B.C. Transylvanian gold was being exported to Egypt. It was, perhaps, mined by Alpines under the direction of the Anatolians of the Tripolje area, whose colonies had extended on both sides of the Carpathian Mountains. It was about the same time that the Anatolians began to experiment in the production of bronze through an amalgam of copper with tin, that possibly derived from surface deposits discovered in Khorasan the north-eastern area of the Iranian plateau. The proportions necessary to give sufficient durability to the new metal were not easily fixed, but an effective formula reaching Tripolje from Anau may have contributed to the early progress of the Carpathian region as a centre of metal-lurgy.

Lake Constance, while connected with the culture of the

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loess plains by the valley of the Danube, had communication also, along the valley of the Neckar, with the neolithic culture of a Mediterranean population that had entered France from the direction of Central Italy and had thence spread to Belgium and southern Britain. As this population increased there had arisen an urgent demand for flint, wherewith to supply the need of picks and choppers for agriculture and for the control of the forest. The chalk uplands were the natural source for such a supply, but surface flints failed to meet the demand either in number or, since they were difficult to work owing to loss of water, in quality. The actual origin of flint-mining in this region may have been incidental to the terracing of hills for cultivation. For this purpose the cultivators employed a pick of red-deer antler, from which all tines except the brow tine were severed by the process of cutting round their base and then striking them off a hammer stone. An alternative tool was a bone grubber hafted to a long handle. These implements together with wedges of wood and bone, hammer-stones up to twenty-five pounds in weight and lamps cut out of chalk, or made of hollow stones, constituted the equipment of the miners. As terracing began to produce a surplus of material well suited for conversion into tools there arose in productive areas a readjustment first of occupational, subsequently of social values. Cultivation was left to women, whose business it was to feed the miners. Men laboured as excavators or as craftsmen occupied in workshops, where the flint was either rough-shaped or manufactured for immediate use. One such centre was in France at Grand Pressigny, Indre-et-Loire, a second in Belgium at Spiennes, Hainault, a third at Cissbury on the English South Downs. The amber-coloured flint of Pressigny was held in great esteem and was exported both as cores for picks and cleavers, and as flakes and blades of exceptional length for knives, scrapers and planes. It has been traced in 443 communes of France and penetrated to Belgium, Brittany, Italy and Switzerland. Various improved methods were devised for

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the excavation of mines. The bluff of a hill might be tunnelled, or a series of trenches might be dug either on the side of a hill or in parallel rows on the flat. At Spiennes the miners employed the superior expedient of the shaft and gallery. An area of over sixty acres was pierced with twenty-five tapering shafts, of which a typical specimen had a surface diameter of twelve feet contracting to three at the bottom, where it opened out into a chamber. Seams were thence tapped by lateral galleries at a depth of thirty-nine feet below the surface. Notches in the shaft seem to indicate the position of the wooden treads of a stairway, up which the flints were brought to the surface in baskets of osier. In the economy of a western mining centre agriculture was a supporting, mining the key industry, craftsmanship and commerce its developments. Exchange created wealth; there was scope for governance and directive ability cannot have failed to become a qualification for leadership. Pit dwellings in the neighbourhood of mines increased in size and were subdivided into two chambers, one to serve as a kitchen, the other for the repose of the tired workers; mining suggested a form of which the main feature was a long pit capable of extension through the construction of lateral chambers. Prosperity began to be displayed by the possession of personal ornaments of amber from the Baltic.

During the fourth millennium neolithic culture in West and Central Europe pursued a peaceful and spontaneous development. The flint-mining of the Atlantic sea-board balanced the pottery industries of Butmir and Tripolje. From these centres on the east Anatolian, on the west Mediterranean, where production in each case exceeded local demand, originated cultural gradients that met in the Alpine lake-land at Constance, and that, judging from the prevalence of amber ornaments in France and the advance of Tripoljean settlements to Breslau, met also on the Nordic shores of the Baltic. Central Europe may thus be conceived as enclosed within a quadrilateral along the sides of which passed early interchanges of experience between four representative

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rates, of whom in the fourth millennium the Anatolians and Mediterraneans initiated, and the Nordics and Alpines reacted to stimulus.

As the produce of the western flint mines travelled north-eastward to the Baltic and south-eastward to Lake Constance it was assimilated by the decisive Nordics and the assiduous Alpines with characteristic discriminations. The former had the more urgent need of implements, wherewith to cope with marshland and forest, and also a superior tradition of workmanship in stone. Thus, although flint was an intractable material that could only be ground by a process of which the Nordic temperament might well have been impatient, the sequence of celts is particularly clear in the Baltic area. Anatolians of Tripolje watching this development produced metal castings in an improved form, of which the excellence so appealed to the Nordics that its reproductions in flint appear to have been reserved for ceremonial use. The Alpines of Switzerland imported flint only to supplement the local supply of stone better suited to manufacture by grinding; their more characteristic appropriations from the north-west were rather domestic than industrial and wholly without value for warfare.

The transition in the Swiss lakeland from the Neolithic to the Bronze Age is represented at Robenhausen, a station situated on the small lake of Pfäffikon, to the east of Zurich, which received three settlements. Of these, the first belongs approximately to the same period as the settlement at Schussenried; the second may belong to the middle of the third millennium when the Alpines were in possession both of copper and of bronze. Both these villages were destroyed by fire, leaving an epitome of their daily life in material that was either indestructible or had carbonized in process of combustion and had fallen through the platforms to be preserved in the peat, which had formed on the bottom of the lake. It is clear that this locality was regarded by the Alpines as highly desirable. All three villages occupied the same site, which consisted of an irregular quadrilateral

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about two and a half acres in extent and on all sides defended by water. The nearest shore lay no less than 2,000 yards distant on the west and was approachable only by boats of which one has survived in the form of a dug-out canoe, twelve feet in length, of semi-circular cross section and shaped to an elliptical prow at each end. The main approach to the site was from the eastern shore by means of a causeway that measured nearly two miles in length.

The relic bed of the first village suggests no ability to split timber. The piles were round stems of oak, beech and pine driven into the shell marl of the lake bottom; these supported the cross-beams, carrying the platform, of which the interstices were filled with mud, gravel or bark. The houses were uniform rectangular constructions of wattle interwoven round small piles and covered with clay or loam. Their floor space measured about twenty-three by twenty-seven feet, each was furnished with a hearth made of three or four slabs of stone. The communal organization of the village appears from the great abundance of corn, fruit stones and flax, found in certain parts of the deposits and indicating that these supplies had been stored in larger structures which served as granaries and perhaps as work-rooms. The villagers had in addition to pottery, hammer-stones and flint saws, wooden clubs, cups of horn and sockets of antler for hafting celts. But their distinctive activity appears to have been textile. The women of Robenhausen manufactured, in apparent excess of local demand, thread, string, network, decorated fringes and tassels, four kinds of plaited cloth and excellent loom-made fabrics. The surviving material is flax, but it has been surmised that they also wove wool.

The destruction of the first settlement was followed by a long interval, during which the site remained unoccupied and the relic bed became covered with four feet of peat. The new settlers dealt with this situation by driving round timber piles so closely into the lake bottom that on an average three or four poles could be counted in each square

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foot. The buildings erected on the platform were probably substantial structures of wood, of which the gabled roofs thatched with straw or reed were left open at back and rear for the escape of smoke. For the equipment of their houses the men provided wooden dishes, one of which was of large tub-like dimensions, handles and suspension-hooks, wooden cups, spoons and various other vessels in pottery. A large door arranged to turn on a pivot may have served to close a communal granary or other storehouse. The second relic bed testifies to many busy occupations. The villagers had the domesticated dog, pig, goat, sheep and ox; they made a wooden ox yoke and a churn, whence it is clear that they utilized their cattle both for draught and for dairying. They cultivated millet, three varieties of wheat, two of barley, the pea and the poppy, flax, possibly also the parsnip and carrot. The men hunted, and fished with nets; they had from the east a supply of copper and of bronze which they smelted in crucibles. The women manufactured textiles, though not in excess of local demand. Women and children collected an annual harvest of wild fruits, which included acorns, beech-nuts, hazel and water nuts, crab-apples, wild pear, cherry, strawberry, raspberry, whortleberry and elderberry. But the supplies of the forest had, with the exception of timber, become of subsidiary value; the bones of domesticated animals in the second relic bed outnumbered those of wild species by a third; utensils were no longer manufactured in horn. In their full neolithic development the Alpine lake-dwellers were democratic, self-supporting and extremely industrious. The second village of Robenhausen supplies no evidence suggestive of autocratic government or of social stratification.

When the second village in its turn came to an end by fire the site once more remained unoccupied until the peat had again risen four feet above the relic bed. The new settlers reconstructed the platforms by driving piles of split timber into the peat and debris without reaching the lake bottom. They possessed a meagre supply of two kinds of jade, from

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which they manufactured small hatchets. It seems possible that their communications with the eastern and northern regions had been broken and that they were apprehensive of invasion. Eventually they abandoned their settlement, removing their possessions with them. The third relic bed has yielded few objects. The total number of piles driven in by the inhabitants of the three settlements has been computed to exceed 100,000.

2

The full neolithic period of West Europe, which dates from the end of the fourth or the beginning of the third millennium B.C., is distinguished by the construction of fortified villages and the burial of the dead in mortuary chambers or dolmens. The fortress of Camp de Chassey, situated in Burgundy between the departments of Saône-et-Loire and Côte d'Or, stood on a rocky plateau nearly half a mile in length and with a breadth varying between one hundred and one hundred and twenty yards. It was naturally protected by escarpments on all sides of approach, but was further defended at each end by an embankment forty-six feet in height above an external ditch. This camp has yielded a fragment of tortoise-shell from a far eastern source. Indications of a growing apprehension of attack are also apparent in Britain. When villages lay along an upland trackway their inhabitants might combine to construct a hill fort to which they could repair in troublous times, transporting their goods, driving in their cattle and forsaking their cultivated terraces until the danger was passed. The encampment at Bradbury Rings near Wimborne, Dorset, attests in the men responsible for its design, construction, and defence, a superior efficiency both in engineering and in leadership. A recent and comprehensive survey of the contour forts of the English South Downs has justified a tribute to the imaginative and æsthetic ability with which their outworks were moulded to the lines of the

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uplands that they occupy. It may be doubted whether the wealth derived from agricultural, pastoral and industrial progress had sufficed to expose settlements of notable prosperity to recurrent inroads of bands of native marauders.

There is, on the other hand, an important assemblage of facts which indicate that the populations of France and of Britain may in the closing centuries of the fourth millennium have been sensitive to considerable movements of peoples that originated in the eastern section of the Mediterranean. The advance of the dynastic Egyptians into Lower Egypt effected in the spirit of military conquest had dislodged large sections of the Mediterranean colony from the delta of the Nile. It is known that such emigrants reached Crete about 3,400 B.C., and reasonable to suppose that they also landed on the coasts of the Aegean mainlands, in Sicily and in southern Italy. This partial evacuation of the delta not only disturbed the usual currents of sea traffic, which were thereby diverted northwards and westwards, but may be assumed also to have set moving along the North African coast a stream of fugitives that reached Algiers and Marocco and thence penetrated into the Iberian peninsula. The cultural superiority of the delta settlements, which reacted favourably on the development of Cretan civilization, was well suited to establish an important ascendancy in the west.

In its most primitive form the dolmen was a rectangular enclosure from five to seven feet long, and from two to three and a half feet wide constructed without excavation from four unworked and unmortared slabs of stone set on edge with the less regular sides turned outwards. Of the end stones one was a little shorter than the others and had the place of a door ; upon the side and back walls was supported a fifth or cap-stone, selected for its weight and size to keep the walls in position. The chamber was protected with a tumulus of earth above which the capstone remained visible. Algiers contains a concentrated area of dolmen burial, which thence extends westwards to Marocco and northwards into the Iberian peninsula. To the north of the

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Pyrenees dolmens are found in seventy-eight out of eighty-six departments with areas of maximum concentration to the south of Dordogne and in Brittany. From France the dolmens extend into Belgium, thence westwards through Kent to a terminal area of concentration in the neighbourhood of Salisbury Plain and eastwards to southern Scandinavia, where they are frequent, and to the north German plain, where they are relatively scarce. It is within reasonable conjecture that the people who practised this form of burial were intrusive from the south and that the areas of dolmen concentration indicate districts in which the intruders in the course of their migration became either temporarily or permanently established.

The historical antecedents of these mortuary chambers have been greatly canvassed. It is true that they are in effect artificial caves and that natural caverns were in apparently contemporary use as cemeteries in France. But the possibility of regarding any one of the French centres as the original district of dolmen culture may be dismissed as incompatible with the geographical evidence in general. The grounds for rejecting this origin apply with equal force to the northern kurgan. We may on chronological grounds hesitate to recognize in these surface burials affinity either with the shafted mastaba or pyramid of dynastic Egypt, or with the brick-walled, partitioned, beam-roofed and mounded pits that were amongst its antecedents. Nor can we with safety ascribe to Mediterranean fugitives beliefs or practices of close resemblance to those of the race that had expatriated them. It is more probable that dolmen burial, which existed also in Palestine and beyond Baluchistan in India, had been evolved within the Anatolian sphere of influence. The tombs that in Crete probably date from the immigration of fugitives from Lower Egypt were like the dolmens surface erections and, though constructed of dry courses of stonework in bee-hive form with a low lintelled doorway and a corbelled roof, were similarly covered with a capstone that remained

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visible above a protecting mound of stones and earth. These Cretan tholoi served as general mortuaries that received thousands of bodies and were rendered hygienic by disinfection with fire.

The dolmen served no such utilitarian purpose. Its conspicuous capstone and the great size of its uprights, which were as large as many men working together without mechanical contrivance could handle, convey the impression of a monument to the important dead. As such this form of burial was appropriate to a people inclined in exile to reflect upon its past and to pay honour to those who had contributed to its recuperation. The southern plain of Portugal, which had in the mesolithic period provided an attenuated existence for the mixed Azilian colony at Mugem, was in middle neolithic times the territory of a population that was artistic and manufactured grey and black polished pottery decorated with white filled linear ornament. This people, as it recovered strength and increased in numbers, became aggressive and produced a great abundance of excellently finished arrow-heads. They ascended the Spanish plateau, reached the Mediterranean coast at Valencia, entered the valley of the Ebro and again made the coast in Catalonia. From this point may be traced a divergence of the direction of dolmen diffusion which passed over sea eastwards through the Balearic Islands to Sardinia, the Taranto district of southern Italy, Malta and Gozo, progressively borrowing new features from the Levant.

This development had been already initiated in Spain, where it is possible to discern two contributory influences. As the outlook of the Iberian colony expanded the dolmens received the addition first of a doorway that resembled that of the Cretan tholos and secondly of a corridor of approach that is suggestive of the walled passages that are known to have conducted to the entrances of Egyptian pyramids. These two features are common both to the Atlantic and to the Mediterranean types of dolmen development. As they passed eastwards, however, the dolmens were subjected to

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influences which became almost exclusively Cretan. The chamber became first polygonal and then round; as it increased in size it was roofed with a cupola of overlapping stones. The corridor also increasing in importance received the addition of alcoves or apses constructed in its sides; eventually the terminal chamber itself dwindled into an alcove. The full southern development was reached at Hal Tarxien, Malta, where an edifice, constructed in the form of a corridor without a terminal chamber but flanked with double apses that were connected by means of doorways cut through single slabs and roofed with cupolas, was certainly designed not as a mausoleum but as a temple in which were offered sacrifices of oxen and pigs. In the decline of this cult the temple, presumably through Cretan influence, was debased to serve duty as a common cemetery.

Since in its land passage northwards dolmen construction escaping these vicissitudes of construction and purpose attained to maximum dimensions in the terminal district of the English Downs, we may assume that it had behind it the conservative support of the people responsible for its introduction. This assumption is confirmed by the distribution of hill forts, many of which appear to have been established as frontier defences to the successive areas of concentration. Thus Camp de Chassey lay upon the north-east of the Dordogne settlement and Salisbury Plain was defended upon its east and south by fortifications of which Bradbury Rings is but the most conspicuous example. If, however, the Iberian tradition of celebrating the memories of eminent chiefs was maintained, it seems as though eminence ceased to be assessed solely in terms of military prowess. The pacific influences that gradually converted the intruders to native standards of industrial and agricultural prosperity are illustrated to the north of Camp de Chassey in the valley of Petit Morin, Marne, where many caves excavated in the chalk reflect the native form of a divided pit dwelling by providing tombs of two chambers, the outer vestibular and the inner sepulchral. In some cases the walls of these

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tombs received engravings of axes and of women ; of these the latter were so highly conventionalized that it appears as though the engraver considered his purpose to have been achieved provided that he had, if only by reproducing the form of a necklace, conveyed an indication of sex. It may be inferred that the axe was a male symbol. Perhaps the intention of these engravings was not more than to secure that the spirit of the dead should be prosperous in respect both of the male occupation of the stone industry and of the female occupation of agriculture.

In the fortification area of the English South Downs the mound covering the dolmen was developed in the form of the long barrow and the men buried in these sepulchres have in head form apparent identity with the race most plentifully represented in pre-dynastic graves of the Theban area in Egypt. The greatest of all the English long barrows is that situated at West Kennet, immediately to the south of Avebury in Wiltshire. This dolmen was approached from the east by a walled and roofed corridor, sixty feet in length. The chamber itself was a rude construction in which the builders displayed no ingenuity in the preservation of artistic proportions. Of the six standing stones one was used to form each side wall, two to form the back, giving in each case an inner measurement of about eight feet. The two remaining stones forming the front were separated by an interval which served as entrance and increased the frontage to about twelve feet. In order to make room for this extra width the south wall had been deflected to the south-east. The whole was covered by a great oval mound of earth 336 feet long, and at the east end increased to a breadth of 75 and to a height of 5 feet. Round the mound had been built a low wall of unmortared stones with upright stone standards at regular intervals. It is possible that we should here recognize a welding together of native and intrusive features.

If the symbols at Petit Morin were intended to ensure a prosperous life for the departed the West Kennet long

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barrow thus appears to associate burial with constructions suited for protection in peace and war. We are ill informed as to the religious ideas of the western culture either before or after the arrival of the dolmen builders. Growth in prosperity may well have tended to make men self-reliant and materialistic of view. They had circumstance well under control. It was appropriate that chiefs should be commemorated, and that they should after death continue to be well provided. For the disposal of the bodies of ordinary men it was hygienically sufficient that they should be buried in trench graves ; it was inappropriate that they should receive in death a consideration which they had lacked when living.

The dispersion of the Mediterraneans from the delta of the Nile was between 3,400 and 2,625 B.C. followed by the first five Egyptian dynasties. The evidences of Anatolian activity during the second dynasty are so conspicuous that it has recently been suggested that this succession of Pharaohs may themselves have been of Anatolian race. The third dynasty was contemporary with the house of Ur-nina of Lagash and extended from about 3,000 to 2,900 B.C. In it was constructed at Sakkara the first pyramid built in step formation as a series of diminishing horizontal planes. This was enclosed within a great wall 5,000 yards long by 3,000 yards wide, that also contained a double colonnade 85 yards in length composed of carved limestone pillars. These architectural achievements were supplemented with extensive mining operations in the Sinaitic peninsula which must have combined to entail an elaborate organization of labour. The operations of the third dynasty were, however, greatly exceeded in magnitude by those of the fourth, during which the Pharaohs employed labour on a vast scale in the construction of the pyramids of Gizeh. The fifth dynasty, extending between 2,750 and 2,625 B.C., is distinguished by a continued prosperity, but a reduction in the enterprise of constructing vast mausolea. In it appear the first traces of the establishment of a superior cult of the worship of the

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Sun god Ra and evidence of the presence in the delta of great numbers of Anatolians who were buried in the necropolis of Gizeli almost under the shadow of the great pyramids.

This influx may be accounted for by the course of contemporary events in Mesopotamia, where about 2,770 B.C. Zaggisi, the patesi of Umma, having made himself lugal of Sumer, overcame the Akkadians and claimed upon his monuments to have subdued the lands from the lower to the upper sea and to have established peace and prosperity throughout a vast dominion. Zaggisi reigned for some 25 years and was then deposed by Sargon of Agade, a man of obscure parentage, who attributed his success to Ishtar, a bi-sexual deity of the northern fertility cult and at once Queen of Heaven and Goddess of battle. Having conquered Sumer and Elam, Sargon in his third year captured northern Syria and crossing the western sea brought back much booty, perhaps from Cyprus. It seems that this expedition was subsequently repeated, for in his eleventh year the Earth god Enlil is said to have given to Sargon the upper land "as far as the cedar forests and the silver mountains," that is to say, Lebanon and the Cilician Taurus. Sargon reigned for 48 years and was succeeded in turn by his three sons, whose joint reigns extended for 62 years. The last representative of this house, Naram-sin, was famous both as a warrior and as a builder of temples. Assuming in virtue of his conquests the title of "king of the four regions," he held sway through his appointed representatives over an empire which may have extended from Armenia to the Persian Gulf and the Red Sea, and from Zagros to the Mediterranean. He set up a pillar in the copper region of Diarbekr and is commemorated as "the Divine Naram-sin" on a seal discovered in Cyprus. Thus, during a period of active conquest, extending over 135 years, the Babylonian empire first Sumerian and then Semitic supplanted the Anatolians in the control of the main mineral resources of the near East, as the third and fourth Egyptian dynasties

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had probably already taken from them the control of the productive areas of Sinai and Nubia. They had even lost autonomy in their ancestral territories of Diarbekr and Syria.

But it may be doubted whether the misfortunes of the Anatolians were limited to these disasters, for it is possible that the resources of labour and material contained in the western area of Asia Minor also passed from their possession. In the north-west the first 'city' of Hissarlik seems to have come to an end about the time of Ur-nina, and the site to have been resettled about the time of Naram-sin with a solidity of structure and a wealth that the Alpine village had wholly lacked. The principal building was a citadel provided with massive gateways, walls and towers, and containing hoards of gold, silver and bronze vessels, ornaments and weapons. Particularly remarkable is the number of silver jars, which suggests that the king owned the Cilician silver mines. The common people lived outside the walls. These evidences of alien control appear to synchronize with a considerable migration of Anatolians towards the south. The end of the early Minoan period of Crete is distinguished by a considerable accession of jewelry and by the introduction of a phonetic script; the first appearance of bronze in Egypt was approximately contemporary with the Anatolian burials at Gizeh.

The foundations of Anatolian prosperity were shaken at the very time when the prospect of commercial expansion was most hopeful. It was for them to discover new resources in areas beyond the range of imperial aggression. The third millennium thus opened for the Anatolians with a crisis abundant in object-lessons by which their mentality and previous experience qualified them to profit. They had a long history of dominance over the less progressive Alpine majority of their own kin. Originally agricultural they had become in turn pastoral, industrial, commercial and finally maritime. They had become neolithic without passing through the palæolithic stage and civilized without traversing

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the ordinary phases of barbarism. For, unlike other barbarous peoples, they had neither cultivated peace at home in order to enjoy the diversion of warfare abroad nor pursued war in order to consolidate peace at home, but had remained both homeless and pacific. Adroit exponents of the methods of peaceful penetration they had on the Iranian plateau, at Anau, in Baluchistan, Sumer, United Babylonia and Egypt, surveyed other peoples traversing these stages, and had everywhere carried the infection of their own commercial enterprise. Competent critics of alien sentiments, methods and results, they had latterly been dispossessed of the mines which were the main sources of their wealth and had succeeded in establishing in Egypt an ascendancy founded on a show of sympathy with an overburdened and discontented population, that had much information to supply as to the mechanical means of conveying and constructing great masses of material, and as to the method of organizing great bodies of men for stupendous and laborious undertakings. To Anatolian imagination the rise of the pyramids of Gizeh may have appealed, not as an act of personal aggrandizement, a motive with which they had little personal sympathy, but like the rhythm of a great machine. Such a rhythm was natural to the assiduous Alpine stock and had energized the communistic population of the second village of Robenhausen. Although this susceptibility was in themselves neutralized by superior initiative, the Anatolians were to make in the exploitation of new mines in areas of which they were unlikely to be dispossessed, their own experiment in a rhythm, that before the development of modern industry was in mechanical efficiency surpassed only by the Inca sovereigns of Peru.

Although the dolmens or mortuary chambers, being composed of stones of a size difficult to transport and erect, may rightly be classed as megalithic, they are by no means the sole or the most striking examples of megalithic structures in West and North-western Europe. The corridor tomb at

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New Grange, Drogheda, on the east coast of Ireland, has in its domed roof and in the recesses of its central chamber affinities to the Maltese temple of Hal Tarxien, but is distinguished from it by the vast circular heap of stones, 300 feet in diameter and 70 feet high, by which it was covered. Of uncertain age, but assumed to be of later date, are the stone structures in western Scotland which are known as the Picts' House and preserve the same features of central chambers covered with a domed roof and conducting into radial alcoves. The probability that these buildings in the west of the British Isles had connection with the ancient architecture of Malta is increased by the appearance in Crete, Malta and Ireland of copper daggers of identical shape and presumably of Aegean origin.

The track of the copper daggers is also that of a series of copper and bronze axes of triangular shape, which show a westward development in type. These axes have been found in Cyprus, Greece, Malta, Italy and Spain, whence they followed the dolmen route into France. This route appears to have continued from Brittany across the channel to Southampton, to have passed Winchester and to have proceeded north-westwards to North Wales and Ireland. The traders were dealing largely in metals. The mining of tin in Brittany seems to have preceded 2,000 B.C., that of gold in Ireland to have dated from about the same time. Ireland has proved singularly rich in manufactured metal, relics of gold, copper and bronze, the first in the form of ornaments, the latter two mainly in the form of axes. There can be little doubt but that the gold ornaments were manufactured locally for export, and that the bronze axes were imported in exchange. The copper axes were possibly also of local production by a native population, to whom the traders had not communicated the secret of combining copper with an alloy of tin. Trackways of the traders, along which bronze axes have been found, either because they were lost or the convoys suffered misadventure, cross Britain, traversing areas known to have been forested and

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avoiding the thoroughfares of the chalk uplands, and converge towards the estuary of the Thames. Articles in gold of Irish manufacture discovered in Denmark continue the track of this overland trading route. Beyond lay the valuable amber of the Baltic, which also reached the Aegean, presumably through the commercial activity of the Tripoljean settlements.

The hypothesis of an Anatolian intrusion into the land neighbouring the Atlantic sea-board towards the close of the third millennium is supported by new features in the working of stone which appeared first in the main dolmen centre of southern France. These earliest indications consist of rare examples of a novel treatment of representations of the female form and of the axe. Full length, draped, female figures sculptured in the round convey the impression of an eastern influence that is possibly Babylonian. The axe was also sometimes here carved with a curiously crooked helve, quite unlike that which appears in the cave sepulchres of Petit Morin, and this helve became, alternatively with circular designs, a motif for the decoration of scutiform sculptures on standing stones, which are suggestive of the free field decoration of Danubian pottery. It is as though an alien art were being employed experimentally on the current themes of native thought.

For such an experiment on the Atlantic sea-board the Anatolians lacked neither qualification nor incentive. They had the cultural resources of civilization, and a long training in accommodating themselves to the manner of life of different peoples. The Mediterranean barbarians would in Anatolian estimation be not the least valuable feature that their new environment offered for exploitation. In order, however, that they might effect a peaceful penetration it was necessary that they should first persuade their hosts that they were not wholly alien in ideas and experience and that they had something to offer that was worthy of acceptance. The Anatolians had long been associated with a fertility cult expressed through the representation of the female

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form, which at Butmir might equally be draped or undraped ; they were importers of the superior metal axe. Thus they could work through native symbols towards the imposition of their own ideas. For it is a safe assumption that the female form and axe had not for the Anatolians the significance which they had in neolithic France. The purpose of the penetration was beyond the anticipation of the Mediterraneans, for it aimed at the appropriation of their labour to the excavation of metallic ores.

Having gained the confidence of the natives it was necessary that the intruders should carry their education further. They must be encouraged to excavate, transport and erect greater stones for their dolmens and to take these stones from localities where ore was abundant. For this enterprise the Anatolians were in the position to supply new applications of the roller and lever with which they had acquaintance in Egypt. Their Egyptian experience had also taught them the value of placing great schemes of statute labour under the sanction of a ceremonial religion. It seems that the Anatolians in West Europe resorted to the same expedient. As the individual ascendancy of native chiefs declined along the trade routes controlled by an Anatolian oligarchy, the barbarians were taught to erect megalithic monuments greatly in excess of those required to celebrate the obsequies of eminent chiefs. The dolmen passed through accelerated stages of decline from a personal monument to a common cemetery ; but its elements survived analysed, isolated aggrandized with the detachment of an alien experience and the substitution of a mundane ritual for a mortuary cult. The two standing stones supporting a lintel at the entrance to the dolmen became the trilithon, further analysis provided the conception of the single standing stone or menhir ; both of these were developed to extreme proportions. Two main groupings of megaliths were those of the alignment of menhirs, which reflected the corridor, and of the circle or cromlech, which reflected the stone standards of a containing wall such as that at West Kennet ; a minor grouping

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was that of the cove, a collection of three menhirs reflecting the mortuary chamber.

The mining district of Brittany became conspicuous for menhirs, which may have served for the commemoration of auspicious events, and for alignments, which may have marked the course of ritualistic processions. The largest menhir in Europe is that of Locmariaquer, in the department of Morbihan, which originally measured 67 feet in length, weighed 342 tons, and was of a granite foreign to the neighbourhood. A strong directive will, a great aggregation of disciplined labour, an organized commissariat and a remarkable knowledge of practical mechanics, involving the expert use of levers, rollers, ramps and haulage, are represented in the transportation and erection of this colossal stone. The greatest monument in alignment is found at Carnac, in the same department, where the Mence monoliths extend in eleven lines for nearly two miles, and after a short break appear to have been continued in the Kermanec group.

The West of England and South Wales were centres of other megalithic developments. Near the route leading from Southampton to Ireland, where the track of the traders cut across the native route of communications along the South Downs, were erected the great constructions of Avebury and Silbury and of Stonehenge. Avebury stands at the junction of the south and west branches of the Ridgeway and on a triangular plateau, of which the angles lie to the north, west and east. Within this area are situated the most notable neolithic vestiges contained in the county of Wiltshire, including cultivation terraces, chambered long barrows, flint factories and the pit dwellings of miners. The great West Kennet barrow occupies West Kennet Hill, about one and a half miles to the south of the Avebury enclosure. The process of transition from the indigenous to the intrusive cultures is illustrated at Winterbourne Bassett, three miles to the north of Avebury, where a long barrow with its external wall was invested with a large double

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cromlech. This feature appears in isolation from the long barrow immediately to the north and south of West Kennet Hill. At Beckhampton, one mile to the west of Avebury, stands an isolated cove. Hackpen Hill, to the east of Winterbourne Bassett, and Overton Hill, about one mile to the south-east of the Avebury enclosure, are surrounded with double cromlechs, that although they do not enclose long barrows have retained the oval form appropriate to such use. Both have in addition been provided with ceremonial avenues of approach, but neither appears to have observed any formula in the number of its stones. Overton is linked with Avebury by its avenue, which, greatly exceeding that of Hackpen in length, was composed of a double alignment of 200 menhirs leading to the chalk rampart, that is the outer precinct of Avebury and encloses a circular area of $28\frac{1}{2}$ acres. The rampart is succeeded by a ditch, above the floor of which it rises in places to the height of 100 feet, thus challenging comparison with a great hill fort but reversing the order suited to defence. Within the ditch the enclosure was further defined by a circle of 100 great unhewn menhirs of the extremely hard sandstone known as sarsen, of which the local supply had consisted of the boulder deposits known in this district, and elsewhere in the south of England, as Grey Wethers. Within this circle, of which the diameter was 1,400 feet, were contained two double circles, each with external diameters of approximately 350 and internal diameters of 270 feet, each, moreover, composed of an outer circle of 30 and an inner circle of 12 stones. These numbers are significant, for they were repeated at a distance of some thirty miles westward in the double cromlech of Stanton Drew and are in correspondence with the calendar of 12 months and 30 days that was first employed by the dynastic Egyptians. The double cromlechs of Avebury were situated the one to the south-east, the other to the north. A single menhir stood between them. The centre of the south-eastern system was occupied by a menhir, that of the northern by a cove; the latter grouping was also

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represented at Stanton Drew. The total number of sarsens comprised within the design of Avebury has been computed to be about 500 varying in height from 5 to 20, and in breadth from 3 to 12 feet ; the greatest of them weighed up to 90 tons, none were artificially shaped. Thus, within the great white wall of Avebury were assembled in an order, of which we do not possess the interpretation, an assemblage of features each of which was in mass and in disposition calculated to appeal to the imagination of the beholder.

Silbury Hill is a huge artificial mound of chalk occupying an area of $5\frac{1}{2}$ acres and with a present elevation of just under 130 feet. Its situation 1,200 yards to the south of Avebury was such that a pole elevated on its summit would be in correspondence with the meridian diameter of the enclosure. Silbury Hill is duplicated on a smaller scale at a distance of some five miles by Merlin's Mount, Marlborough. Both hills were constructed on a foundation of clay and presumably of blocks hewn out of the chalk. Their present conical formation is to be ascribed to denudation. Vestiges of original quadrature at Silbury and of step formation at Marlborough suffice to justify the hypothesis that both had the original form of truncated pyramids. If so, they represent an important progress beyond the stone mound at New Grange, Drogheda. The art of the mason has been practised in shaping a material that was exceptionally easy to work, and applied to the erection of a monument greatly superior to the West Kennet long barrow and, but for its level summit, approximating in form to the great Egyptian mausoleum at Sakkara. There is little doubt that Silbury Hill and Avebury form part of a single design ; of the two Silbury may be the later, but there is no clear evidence as to the date when these two monuments were constructed. There is no indication that either was intended for mortuary use. The magnitude of the enclosure at Avebury which would have sufficed for the accommodation of great numbers of men suggests that this station may have served as an administrative metropolis for the megalithic merchants in the

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British Isles, and as a school for the instruction of native workmen.

Still less is there ground for the supposition that the unique monument of Stonehenge standing in the centre of the desolate chalk upland of Salisbury Plain and to the west of the trackway that led northwards from Southampton was erected for mortuary purposes. The site was probably selected for its isolation and for the local abundance of sarsen boulders. It was approached by two roads, one leading from the east, the other from the north, and may have been periodically visited by traders in their passage to and from Wales. These roads met at a point about one-third of a mile to the north-east of the precincts, whence a straight avenue led between two alignments of standing stones to a circular embankment with a diameter of 300 feet. On either side of the gap, by which the enclosure was entered, stood four great sarsen stones disposed in pairs; of these but one, popularly known as the Slaughter Stone, now remains, recumbent where it fell and with a total length of 21 feet 6 inches. Within the earthwork extended a circular courtyard 100 feet in breadth reducing the site actually occupied by the monument to a radius of 50 feet. The megaliths within this small area were symmetrically disposed around a centre which lay at the intersection of transverse lines drawn from four stations marked by small stones on the inner edge of the earthwork. Their orientation accorded with an axis fixed by the incidence of sun's rays at dawn in midsummer of approximately the year 1,840 B.C. The plan of the temple comprised four concentric systems of stones disposed in two exterior circles and in two interior formations of the shape of a horseshoe. These systems were, however, architecturally of unequal importance. The design was dominated by five magnificent trilithons of sarsen that formed the exterior horseshoe and were so graduated in height that the elevation culminated in the central trilithon, 25 feet 6 inches in elevation, between the uprights of which the axis passed. The outer faces of the

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lintels of these trilithons were shaped to arcs of a circle. In the focus of this horseshoe, that is to say, across a line bisecting the central trilithon and level with the outer uprights of the two trilithons that flanked it, lay a flat rectangular slab of micaceous limestone, that had probably been transported from Wales. Second in importance to the sarsen horseshoe was the containing system composed of thirty sarsen uprights disposed at equal intervals along the circumference of a circle and crowned with lintels of which the upper surfaces lay in a single plane, below that of the shortest of the trilithons which composed the horseshoe. The outer faces of these lintels also were shaped to arcs of a circle and since two lintels met above each upright the principle was that of trilithons in composition and the effect that of a continuous circular coping. The axis accurately bisected the interval between two uprights to the north-east of the containing circle. The inner circle and the innermost horseshoe were composed of smaller monoliths of two igneous rocks imported from Wales; those of the latter had been the more carefully selected and shaped into obelisks. According to ancient Celtic legends from Wales, Stonehenge was erected on the advice and through the magical power of the wizard Merlin, an account which obviously confuses the transportation of the smaller stones with the mechanical skill expended in the erection of the great pillars and lintels of the local sarsen trilithons.

The grandeur of this temple deeply impressed Inigo Jones who, as Architect-General to James I, made in 1621 elaborate notes and measurements of its proportions and left drawings that have provided important suggestions for its theoretical reconstruction. The results of the scientific exploration of the orientation of the megaliths, the comparison of native methods of quarrying and dressing sarsen in Wiltshire and granite in Assuan, Eastern Bengal and Hyderabad, examination of the methods of mortising and seating the plano-convex lintels and experiment by means of models in the mechanical contrivances requisite for the

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erection of the trilithons have now supplemented these researches. There remains little doubt that this unique monument, devoted towards the close of the megalithic period to sun-worship, was designed by an artist equipped with eastern science and erected by organized labour employed in carefully supervised processes, that had involved the training of the operatives but made a comparatively small demand on their technical skill. Apart from any ritual which may have been celebrated within its enclosure, its mass and the perfection of its adjustments, if not its nobility, can hardly have failed to appeal to the æsthetic standards of Mediterranean perception or to have contributed to the transference of native allegiance to the service of commercial oligarchs from the Levant.

3

The main contribution of the Anatolian traders to the history of Europe in the latter half of the third millennium is to be sought less in the evolution of their own commercial enterprise, or in the discipline, which they imposed upon others, than in their redefinition of the periphery, within which exchange of experience had previously proceeded in a spontaneous but somewhat haphazard fashion. From this periphery, which now enclosed the islands of the Mediterranean, Ireland and southern Scandinavia, cultural gradients began to reflow eastwards towards the point where the Moravian Gate stood at the junction of the Atlantic and Galician systems of trade. The penetration of corded ware from Denmark into the northern plain, Silesia and Bohemia had perhaps been due to the intrusion of dolmen culture. Subsequently crude pottery of beaker or drinking-cup form, and with an ornament founded on flexible rush-work, reached the same centre from a south-western area, believed to be Spain, where the characteristic plant of the plateau is the halfa or esparto rush. The type of beaker discovered in the Iberian peninsula was bell-shaped with a

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high waist and a hemispherical base, which recalls the form of silver vases found in the second city of Hissarlik. These bell-beakers travelled from the Mediterranean coast of the peninsula to Sardinia and North-eastern Italy and across the Brenner Pass to Bohemia on the north-west and Buda Pesth on the east. They thus reached the critical region of Tripolje territory to the south of the Carpathians.

Although Tripoljean contacts extended eastwards to Anau, northward to the steppe, westward to the Baltic and southward to the Hungarian plain, the bulk of the Tripolje population lying in eastern Galicia was most closely associated with the peoples of the steppe. The cultures of these two districts had little in common. The Tripoljean pit-dwellers were agricultural, metallurgical and commercial, and disposed of the ashes of their cremated dead by urn burial in areas set apart as cemeteries; the nomad Nordics, who had domesticated the horse, were pastoral, and buried their dead with ochre in kurgans. At the western extremity of the steppe these two stocks had none the less intermarried, for kurgans have there yielded many examples of rounded or of medium crania.

About 3,000 B.C. a prolonged drought appears to have created restlessness on the steppe, whence groups of nomads departed westwards to join the settled Nordics of the northern plain, and southwards to establish in Hungary a subsidiary centre of horse-breeding. Certain Nordic elements seem to have reached the Anatolian settlements in Bosnia, others entered Bohemia, others ascending the Danube reached the Alpine settlements on Lake Neuchâtel. Wherever impulse carried them the invaders readily secured ascendancy over the pacific Alpines. By 2,600 or 2,400 B.C. the Nordic dispersion was so general as to have cut the communication that supplied the Tripoljeans with metal. The pit-dwellers in consequence lost their metallurgical industry and entered on a second phase of their culture in which agriculture became of increased importance. Thenceforward perforated stone axes and hammers of Tripoljean

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type appear only as prized heirlooms in the tombs of Nordic warriors of the Baltic area.

About 2,250 B.C. a still more serious drought initiated a new series of Nordic invasions which, as though directed with an instinctive sense of the points at which a decisive blow could be struck, destroyed the previous balance of Europe and the near East. One tide of invasion passing eastwards about 2,200 B.C. destroyed the city of Anau, and cut the previous trade communications between Mesopotamia and Khorasan. In 2,100 B.C. the invaders were reported to be in possession of the Iranian plateau and of an animal hitherto unknown to the Babylonians and described by them as the "ass from the East." These horsemen invaded Babylonia in 2,072 B.C. Another tide of Nordics moving west had about 2,225 B.C. swept away the Tripoljean settlements and entered the Hungarian plain by the Moravian Gate. The Tripoljean and other Danubian populations disappeared in flight westwards to Bohemia and Bavaria, southwards to Bosnia, south-eastwards towards Asia Minor, and were at least in the two last directions pursued.

The Nordics, having in 2,200 B.C. destroyed the second city of Hissarlik, replaced it with an inconspicuous village of which the deposits have yielded a Nordic skull. They appear to have established suzerainty over the Anatolians of Syria, who became organized as Hittites and over those of the copper district of Diarbekr, who became organized as Mitanni. These conquests seem to have paralysed the carrying trade between Egypt and Crete. Babylonia was raided by Hittites in 1,926 B.C., and in 1,746 B.C. conquered by the Nordic horsemen of the Iranian plateau, who thereupon established in Mesopotamia the unprogressive Kassite dynasty. These irruptions appear to have disturbed Semites who invaded Lower Egypt and there established the equally reactionary Hyksos dynasties. As though to complete the frustration of Anatolian commerce the wealthy copper centre of the Punjab was about the same time, or shortly after, conquered by men who employed an early form of the

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speech known as Aryan, the tongue of Aryas or Nordic lords ; an earthquake or revolution in Crete suspended all trade between the Aegean and the western Mediterranean ; while the appearance of Nordic horsemen in Thessaly, which may account for the legends of the centaurs, cut the north-eastern connection of the Balkan peninsula.

Meanwhile, the Nordic occupation of the Hungarian plain had set other tides of population in movement. Owing to the fear of invasion by Nordics or by other peoples, whom the Nordics had displaced, Bohemia became 'congested with fugitives and groups of a mixed race that was broad-headed, heavy-browed, with a massive square face and a high-vaulted cranium, the descendants of Nordics of the previous dispersion of 3,000 B.C. and of Alpines, departed westward. Their migration has been traced by pottery, of which the typical form is a beaker or food jar derived from the bell-beaker of Spanish type, modified both in shape and ornament in the direction of the corded ware of the North. The northern beaker is rather vase-like than bell-shaped, and has a flat base. Its ornament sometimes took the form of a dotting in horizontal and vertical lines, which is intermediate between the unbroken impress of corded ware and the parallel intersections of the plaited motive. This people moved northward down the valleys of the Elbe, Weser and Rhine without metals and employing cist burial. They occupied Jutland and the Netherlands, whence passing to the estuary of the Thames they made their way to the Yorkshire wolds, the east coast of Scotland, from the Forth to Caithness, and reached as far west as Argyle, East Bute and Arran. They are better known along the South Downs, where their round barrow culture marks the approach of the Bronze Age and is successive to the megalithic period of Salisbury Plain.

To these disturbances may also be attributed the evacuation of the third village of Robenhausen and the intrusion about 2,000 B.C. of an Alpine population into the Italian lake district, where their characteristic culture appears

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in attenuated form at Lagozza in Piedmont but displays a measure of recuperation at Arquà in the Euganean Hills.

About 1,800 B.C. north-eastern Italy received other immigrants who arrived from the direction of Bosnia. This people, settling in the lower course of the Po, in the provinces of Parma, Reggio, Modena and Bologna to the south, and of Brescia and Mantua to the north of the river, constructed on dry soil platform settlements enclosed within an artificial moat with an inner rampart of earth. This form of village known archæologically as *terra mara* was uniformly trapezoidal in form and was orientated roughly from north to south.

Of over 100 *terra mara* discovered in the Po valley the most informing is Castellazzo in the province of Parma. Situated on a plain and occupying an area of about forty-seven acres this settlement was laid out with mathematical precision and ingeniously defended. While its inhabitants were engaged upon its construction they had occupied a camp at some distance from its bounds. Since the situation of Castellazzo was without impeding features the builders had complete freedom in respect of orientation and dimensions, for determination of the four angles of the quadrilateral and for selection of the point of entrance. From the evidence of other sites their first task had been to excavate a small augural trench, whereby the limits of the station were defined. Beyond this trench was constructed a buttress, $2\frac{1}{2}$ metres in width, consisting of a series of rectangular cages of rough squared beams, filled with a mass of clay and rough timber and kept in position by a row of piles. Outside the buttress a width of 15 metres was left vacant and bounded by a moat 30 metres in width except at the entrance to the settlement, where its width was extended to 60 metres. The soil from this excavation was thrust against the buttress so as to form a rampart of earth with an external face sloping gently backward and completely filling the vacant space. The bed of the moat was graded in depth to control the flow of a stream, so diverted as to enter from the south

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against the sharpest angle of the rampart, which was there strengthened with stones. The waters thus parted, flowing in two directions completely encircled the settlement and eventually met to escape by a shallow trench on the east side. Access to the settlement was provided by a wooden bridge of which the pile base was 30 metres wide. This bridge led to the great north and south road of the village, 15 metres in breadth and intersected at right angles by an east and west road, which was probably $7\frac{1}{2}$ metres in width. The latter road at its east end led to the area, keep or sacred enclosure of the terra mara, which was surrounded with an inner moat 10 metres in width and 6 in depth, and crossed by a bridge 15 metres wide at its pile base. The area consisted of a great artificial mass of earth held together by a retaining wall, built of six parallel rows of piles supporting vertical courses of strong brickwork packed with earth. Thus constructed the mound of the citadel rose vertically from the very edge of its moat. Within the area and in a line with the area bridge was a trench 25 metres long, 5 metres broad, $3\frac{1}{2}$ metres deep with sloping sides ; on the contracted bottom of this trench were five ritual pits each covered by a wooden lid supported on crossbeams.

The area was the only part of the terra mara which rested on natural earth, the remainder rested on a wooden platform. The surface was studded with regular rows of piles reaching to the height of the buttress and carrying horizontal planks of wood which were in some places covered with beds of clay. On this platform the inhabitants lived in huts of wood, thatched with straw and probably daubed with clay. They appear to have thrust their refuse down holes in the platform, and when the intervening space became filled up to have fired the settlement and to have reconstructed their new homes on the debris of the old. The terra mara of Castellazzo had beyond its moat two cemeteries, one of which, situated to the south-east, was constructed as a terra mara of the dead. It occupied a space of 90 square metres and was surrounded by a moat 10 metres in width ; access

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was by means of a bridge on the west side. Within the enclosure the vases containing the cremated remains of the dead lay with little or no funeral furniture on a platform supported by piles. It appears as though these cemeteries were consecrated areas, for the urns were either deposited, without burial or merely interred up to the neck, and covered with a basin or a stone. When the space was fully occupied, it was perhaps covered with a new layer of earth, upon which further urns were superimposed. Such a practice may explain why in a *terra mara* burial-ground smaller ossuaries have sometimes been found resting within the necks of larger vases, so that their general appearance upon excavation has been likened to a "Potter's house, where all his wares are piled."

In this situation, easy of approach from the metal centre of the Aegean, stone had been almost completely replaced by bronze. Bone was used for the manufacture of bits for horses, ornaments for harness, and small ornamental wheels. The pottery was of two types, one coarse, the other fine. One form of ornament common to the lake-dwellings of Italy and to the *terre mare*, consists of the application of strips of clay and is possibly of native Ligurian origin. The handles of fine vases are characteristically either crescental or horn-shaped or axe-like. Clay figurines of men and animals, which possibly represent the pig, and infrequent beads of amber are of northern provenance. The *terra mara* people above all excelled their neolithic neighbours in North Italy in metallurgy and agriculture. They collected wild fruits, nuts, apples, pears and cherries; cultivated two types of wheat, flax, beans and the vine; they hunted stag, deer, wild boar and hare and had domesticated the dog, pig, ox, sheep, goat, cat, fowl, duck, horse and ass.

It cannot be doubted that the *terra mara* culture at Castellazzo was of composite origin. The method of disposal of the dead, the clay figurines and the metallurgical efficiency indicate Tripoljea antecedents. The general character of the settlement, the manner of its life, with

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liberal agriculture, and pasturage, and subsidiary hunting, and the collection of fruits, derives as clearly from Alpine culture. The engineering skill and the precision shown in the calculation of dimensions of the platform and of its defences probably derive from Aegean contacts. The welding of all these elements together within a defensive whole, the orderly advance of the constructors towards a selected site, its careful inauguration, its excellent ground plan and foundations, its mean superstructure, the unhygienic tidiness of the inhabitants, their disciplined consent to the periodic destruction of their homes and to the heavy labour of a reconstruction, all indicate a military control, which on the evidence of the bits and trappings of horses, and of wheel ornaments in bone, together with the appearance of bronze swords may be assumed to have been Nordic.

Having delivered their momentous attack on Central Europe and the near East, the Nordics appear between 2,000 and 1,500 B.C. to have remained in quiet possession of the Hungarian plain, which became a main centre of their ancestral culture. Meanwhile, Anatolian enterprise repressed in the Levant and threatened with the loss of its Babylonian and Egyptian markets, remained for a time active in its distant areas of exploitation, and gradually consolidated its influence to the north-west of the Balkan peninsula. But no one ventured to disturb the simple horsemen, who herding their cattle on ample pastures entertained no projects of empire or thought of commercial gain and offered no welcome to men of alien speech. Perhaps, like wild tribes of Persians encountered much later by Xenophon, they chiefly taught their sons three things, to ride, to shoot, to speak the truth. Amongst themselves they doubtless exercised and respected the right of each man to rule his own family and dispensed an occasional and ungrudging hospitality. As families increased and the pastures filled, a restlessness began again to trouble the Nordic population hemmed in within a ring of mountains, and caused adventurous men and outlaws to intrude on the Alpine population of

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the south-east, whose interest it was to receive them as protectors against their kind. Thus there arose on the southern outskirts of the plain a demand for bronze daggers, which was met from Bosnia by the supply of weapons of increasing length to fit with Nordic strength. By about 1,600 B.C. this trade had reopened a traffic across the plain; about one hundred years later the plain had been supplied with bronze swords.

The growing restlessness of the plain-dwellers led to an increase of Nordic prestige in the Balkan settlements, where Nordic adventurers, conscious of their worth, gained a social ascendancy that was disproportionate to their numbers. They passed from settlement to settlement registering accurate impressions and assuming leadership. They became a caste, which refused to intermarry with Anatolians, retained its native speech and worshipped apart. A belief became current that they were of divine descent. About 1,300 B.C., after the Anatolian traders had twice supplied the nomads of the plain with improved patterns of bronze swords, the internal pressure of an excessive population reached the point of a fresh explosion and the Nordic invasions were renewed. Great bands of horsemen crossed into Asia Minor, where they became known as Phrygians; representations of men with white skins, blue eyes and fair beards in the necropolis at Thebes seem to indicate that they also reached Egypt. Other bands invaded Bosnia, whence a small body crossed the Adriatic and established settlements in the neighbourhood of Lakes Trasimene in Umbria and Fucino in the neighbourhood of the Sabine Hills; others somewhat later having organized a following of Anatolians and Alpines moved south through the Balkan peninsula in the Achaean invasion, which mastered the Cretan colonies of Mycenae and Tiryns. That the life of these cities continued under the new control without radical change of occupation may perhaps have been due to Anatolian influence; the subsequent invasion and conquest of Crete itself was an enterprise of more distinctively Nordic

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character. In these invasions the Nordics appear no longer as isolated adventurers, organizing existing settlements, which extended to them hospitality, but in the strength and temper to impose their language and religion upon the armies that they led and the districts in which they settled. Macedonia, Asia Minor, the Balkan peninsula and central Italy received Aryan speech and an anthropomorphic religion with deities who, like the grey-eyed Athene or the golden-haired Apollo, were credited with northern features.

Thus relieved of its excess population the Hungarian plain resumed its tranquillity to remain quiescent until, in a new period of unrest between 1,200 and 1,175 B.C., Nordic leaders with retainers of Alpine or mixed Nordic and Alpine type swarmed westwards to the Rhine. The main body crossed the river and conquered France, but a smaller body descending to its mouth crossed the North Sea to the estuaries of the Thames and Humber, or passing down the English Channel reached Southampton. From these landings they pursued the ancient Anatolian trade route to North Wales, bringing the west also under the dominance of Aryan speech. To later years of the same century belongs the beginning of the European Iron Age. Nordics passing through the Moravian gates into Galicia made their way eastwards to the steppe and settled in Koban on the northern slopes of the Caucasus. Here they met with men who on the southern slopes of the same mountains were, perhaps under Anatolian direction, mining iron. About 1,100 B.C. they returned to the Hungarian plain, equipped with the iron sword, to discover in Transylvania and in the Save valley great deposits of iron ore.

About 900 B.C. the plain became once more the centre of great eruptions of Nordics, who with the impulsiveness of their race and followed by armies of subject Alpines descended on France, Switzerland and Italy, with irresistible force. The western invasion entering France and the Swiss lakeland, where the Nordics destroyed the lake settlements, set up many secondary invasions. Fugitive Alpines reached Den-

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mark, Sweden and Finland, and crossing the North Sea to the estuary of the Thames passed westwards to Reading, Wiltshire, South Wales and Ireland, carrying with them the practice of incinerating the dead and the habit of settling on low ground near water. Other Alpines entering the valley of the Po from the west, brought with them the early iron culture known as Villanovan, and dividing near the headwaters passed on, some southwards towards Tuscany, others eastwards towards Bologna. Mixed Alpines and Anatolians who entered the Lombard plain from Bosnia were followed by a Nordic invasion that destroyed the terra mara, driving their inhabitants south towards Latium.

In the middle of the ninth century B.C. the coast of Tuscany was occupied by piratical immigrants from the Aegean, who employed a non-Aryan speech, which they had committed to writing by the use of an early form of the Greek script. These first Etruscans displayed on arrival few signs of a culture correspondent with this notable achievement. They were apparently without skill in architecture and buried their dead in trenches surrounded by stone circles and sometimes covered with a mound. It is possible that they at first adopted these practices in imitation of their neighbours, who were mostly Mediterraneans akin to the unprogressive Ligurians but also in part prosperous Villanovans. In a second phase the Etruscans began to dispose of their dead by incineration and became industrial, developing from the black Danubian ware a distinctive type of pottery and producing expert work in metal. It was, perhaps, in consequence of commercial relations that the neighbouring hill folk of the Appennines acquired from them the art of writing with modifications that established the Latin script. By 700 B.C. the Etruscans had established a complete ascendancy over the Tuscan plain and their corsairs were infesting the Tyrrhenian Sea. They were organized under local chiefs, who lived in walled cities, exercised priestly functions and accepted the supremacy of one of their number

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as overlord. These chiefs amassed great hoards of wealth, lived in Oriental luxury and had a passion for jewelry. In their peaceful penetration of Tuscany, their initial adaptability, restless pursuit of wealth, method of organizing a new province and oligarchical institutions there is ground to suspect that the Etruscans were in origin of Anatolian descent, and this surmise is supported by what is known concerning their physical type.

Meanwhile, of the population that had fled before the Nordic invasion some had taken refuge in southern Italy; others had halted in the central Appennines, which were already the cradle of a mixed society largely Anatolian and Alpine, but partly also Nordic. Of the three districts composing this region, Umbria in the north, Sabine territory in the centre, Samnium in the south, the first two had been reached by the Nordic invasions of 1,300 B.C. and had possibly also received other Nordics who entered with the *terra mara* fugitives. Their conquerors following them imposed upon these various elements a softened form of Aryan speech in which the guttural K or Q was partially labialized into P. To these societies the round-headed population had much to contribute. They had experience of highland and marsh, of agriculture, and of the fortification of strongholds on the plain. They were assiduous and capable of becoming disciplined under efficient leadership. As their numbers increased the hill folk occupied the fertile plains of Latium to the south of the river Tiber, taking the previous population of Mediterranean race into servitude and in case of attack relying on retreat to the Alban Hill, a volcanic eminence which, rising 3,000 feet above the plain, was well suited to serve as a natural fortress.

By the middle of the eighth century, when the population of Latium had evolved a distinct dialect, the Etruscans had grown sufficiently formidable to indulge their predatory habits on land, and the Latins, with a discretion that recalls the settlement of the site of Castellazzo, established on the left bank of the Tiber an outpost at a point safe from mari-

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time raids, where a knot of low hills presented a bluff to the river and an easy ascent from the south. Having fortified the Palatine Hill and established a bridge-head on the northern bank, the Latins founded Rome as a terra mara on dry land. It is open to question how far the Nordic element remained in control of the earlier fortunes of the new settlement, or by what stages Rome passed during the sixth century under Etruscan kings of the Tarquinian dynasty, who astutely first erected temples to the Nordic deity Jupiter on the Alban and Capitoline hills and subsequently enriched the plebeian cult of Diana with a temple on the Aventine. In legend the expulsion of the Tarquins appears as due to an affront to Nordic susceptibilities, and the organization of Roman society as it first becomes clear in tradition was based on the solidarity of the family, the autocratic power of its head, the belief in a household deity and of a second spirit that either protected its land or was definitely ancestral, and on an aristocracy that refused marriage outside its own order and despised trade. Severity of manners, directness and truth in speech, hardness of judgment and body were traditions that Romans continued to hold in respect throughout their early history. All these institutions and qualities are consistent with Nordic practice and character.

Except where the plains of Boeotia, Thessaly and Thrace provided expanses suitable for pasturage, the Balkan peninsula had proved more favourable to Anatolian commerce and to Mediterranean or Alpine agriculture than to Nordic initiative. The sons of the Achæan conquerors of Mycenæ and Tiryns captured Crete, their grandsons in 1,183 B.C. sacked Troy, a succeeding generation in 1,176 B.C. colonized Cyprus. It is probable that by 1,050 B.C. the Nordics had except in the northern plains been assimilated into a mixed Anatolian and Mediterranean population which may be classified as Ionian. Thus the Dorian invasion which followed in about 1,000 B.C. was actually a reconquest of the Balkan peninsula by a force greatly resembling in composition that which had invaded it three centuries earlier. The

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leaders were again Nordics from the Hungarian plain, though now armed with the iron sword, its rank and file were again Anatolians and Alpines from the north. The difference in the issue consisted in the fact that the invaded area had reached a more settled constitution of race and of culture than at the time when it was controlled by the Mediterranean supremacy of the Cretans. For the two and a half centuries that preceded the founding of Rome the main settlements of the Balkan peninsula passed under the control of kings employing the variety of Aryan speech. But the numerical strength of the Nordics in this period was never great, and the geographical and climatic conditions insensibly secured an encroachment of Ionian privilege on Nordic prerogative. The recovery of the Ionian population is apparent in the renewed commercial enterprise that towards the end of this period led to the foundation of colonies in Thrace, on the shores of the Black Sea, in southern Italy and Sicily, a process of expansion that continued into the seventh century and corresponds in time with the Etruscan conquest of Latium.

As the process of Ionian colonization proceeded with a constantly increasing commercial bias and recovery of contacts with Babylonian science, there emerged in the first half of the seventh century B.C. the authoritative systems, comprising elective, deliberative, administrative and judicial functions, ritual and the control of unfranchised aliens, which are known as constitutions. The succession of these to the exercise of discretionary powers by hereditary rulers marks a stage in the consolidation of the component races of Hellenic population.

In founding a new colony the Ionians were anxious to establish an equipoise free from the social and economic antagonisms that disturbed the domestic history of mainland states. But it would be inadequate to describe the spirit of an Ionian constitution as a compromise between privileges and services that derived from distinct racial histories. The ordinary citizen living within the freedom of

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a non-Dorian city accepted the provisions of its constitution as highly natural, appreciating its symmetry much as he appreciated mental versatility or perfection of bodily balance. Superior minds though more critical reached much the same conclusion. Plato was at heart a lover of tradition, who had a deep distrust of innovation. He has in the *Republic* sketched a Utopia controlled by an aristocracy of intellect developed from a military caste, of which the virtues courage, wisdom, temperance and justice are conspicuously Nordic and their contrary vices as clearly Ionian in origin. He introduces his later work the *Laws* by means of a discussion on the Dorian Cretans. Brought up at the Court of Pella, and appointed by Philip of Macedon as tutor to the typically Nordic genius of the young Alexander, Aristotle's sympathies were more democratic. He assumes in the *Politics* that there is no form of existence so natural to man as that provided under an Ionian constitution and appears to imply that all free citizens could equally profit by the same educational opportunities. These divergent opinions are united in respect of the naturalness of social life. This conviction needs, perhaps, no other explanation than that the constitutions were the product of an endowment that combined qualities that were practical and purposive, versatile and selective, industrious and patient, artistic and ambitious, of Nordic, Anatolian, Alpine and Mediterranean origin respectively.

To a modern historian the Ionian constitutions are above all remarkable for symmetry and fragility. For the former, which admitted of infinite variety, it is not easy to account on any other analogy than that of natural growth which alone assures harmonious proportions to bodies and minds. While the cities of Hellas retained autonomy and successive generations of men received, augmented and transmitted the composite endowment of the Ionian race this growth, achieved as Plato might have said, by the turning of the eye of the soul towards the light, was possible. Political compromise, a mechanical method of composing differences,

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produces no such symmetry and could have given no such general assurance of naturalness. It was, indeed, singularly ineffective in Greek life, and the fragility of the constitutions may be traced in part to their youthfulness and in part to legacies from the past, that impeded fusion between the elements which the Hellenic population comprised. The downfall of Sparta, where this lack of cohesion was most flagrant, arose through the depletion of her military caste, which, owing to the equal inheritance of sons, fell gradually below the level both of ability to defray club subscriptions, and of competence to control the servile population of helots. The menace of the individual assertion of the temperament of some one of the component races beyond the confines of the city state was yet more serious to Hellenic prosperity. The productive balance of Periclean statecraft intervened between the Anatolian substitution of an annual tribute for the naval alliance that had defeated Persia, and the incitement of Mediterranean ambition to the conquest of Sicily that anteceded the Macedonian conquest.

CHAPTER VII

THE NEW WORLD

I

FOR the early history of man North and South America are united in a single far eastern continent that was originally populated from North-east Asia by migrations of the Mongoloid stock across an ancient landbridge that spanned the Bering Sea. These invasions began long before the Würmian glaciation of Europe. Loess deposits at Lansing, Kansas, belonging to the Iowan interglacial phase, which has been dated as preceding Würm, have yielded at the depth of 20 feet below the surface a human skeleton that is of modern form and was associated with a pre-Chellean implement of chert. Fragments of a skull from Trenton, New Jersey, discovered in a gravel-bed laid down in the Wisconsin glaciation, the American counterpart of Würm, are also modern in type and were associated with an implement of approximately Chellean technique. A wide distribution of very ancient round skulls is in South America either accompanied or preceded by long skulls of two types. The race of Lagoa Santa, curiously small of head with a very long elevated brain-case, wide and short face, and exceptionally large palate, belonged to the highlands of Ecuador, Guiana and eastern Brazil; the tableland of Patagonia held a race which is undistinguishable in skull-cap from the proto-Nordic type discovered at Brunn, and may still be traced as a survival in the modern populations both of Patagonia and of Tierra del Fuego. We may on the western evidence disregard the uncertainty as to the relative antiquity of

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peoples that in head form became specialized on the plateau or remained unaltered in the forest. The Lagoa Santa display the signs of strife between natural growth and accommodation to circumstance; this was probably a feeble race ill fitted to survive. We may assume that the ancestors of the first Patagonians, if actually of the eastern stock, were almost pre-Mongoloid when they encountered conditions that were equivalent to those of the Asiatic steppe.

Of extant races the Arctic specialization of the eastern Innuít, or Eskimo, of Greenland and Labrador rivals in severity those of the Tasmanians and of the West African negroes. The first traces of this people have been found in the North Atlantic sea-board in the State of Massachusetts. Their possession of a material culture founded on bone separates them from the less typical Innuít, whose territories lie to the west of Hudson Bay, and who make a liberal use of wood. Since the western Innuít were probably amongst the earliest of post-glacial immigrants into the North American continent, it is possible that the Wisconsin glaciation, intervening between the first and subsequent Innuít immigrations, forced both the Asiatic and the American branches to move southwards, the former to the northern confines of the forest, the latter to the extreme south of Greenland and to the Massachusetts coast. As the ice receded, gradually giving place to a climate far more temperate than that of the present, the Innuít would return, the Americans to link up across the north of Baffin Bay, the Asiatics to send over to Alaska further bands that carried with them woodcraft of Siberian origin.

The existence of important similarities of grammatical construction or of vocabulary that unite languages in a group, or linguistic stock, such as the Aryan, may be assumed to indicate some measure of cultural association between the ancestors of the peoples that employ them. As in process of time the original speech was subdivided into dialects, such as the Q and P variants of Aryan speech, and these in their

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turn became parental to other dialects, the features of the original speech may wholly disappear, but there is high probability that vestiges of a common origin will remain to throw light on the diffusion of the culture to which it once belonged. While evidence of this character contributes towards a comprehensive survey of cultural antecedents in each of the other continents, its value for native American history is mainly to indicate cultural disintegration within the continent. The preliminary classification of native American languages has entailed the recognition of no less than 169 unrelated linguistic stocks of which 56 belong to North America, 29 to the central isthmus and 84 to the imperfectly explored extent of South America. The six linguistic stocks of greatest territorial extension in North America have an average subdivision into 44 major dialects or languages.

The manner, duration and sequence of the post-glacial immigrations are hypothetical. It is by no means clear that we may assume the Holocene survival of the landbridge. Failing to secure a passage by land, early groups may have made their way in winter over ice. Yet it seems unlikely that the emigrants, who owed a considerable residuum of plasticity to prolonged residence in an unrigorous climate, should have been attracted so far northwards prior to the abatement of arctic conditions, and the optimum climate that followed the Wisconsin glaciation may be presumed to have involved a corresponding diminution of the ice-floes. The fertility of resource displayed by the native Americans in extemporizing boats suggests that post-glacial transit to the New World may have been effected by sea.

Beyond the Bering Strait the Alaskan gateway led to the valley of the Yukon River, whence, near to the present International Boundary between Alaska and British Columbia, the route divided. Further ascent of the Yukon River led towards the western plateau to the south and eventually to Central and South America. Further progress east led to the valley of the Mackenzie River beyond

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the Rocky Mountains, thence to the Great Slave Lake and Lake Athabasca. It was, perhaps, in the neighbourhood of the latter lake that the eastern route in its turn divided leading southwards to the prairies, south-eastwards to Lake Winnipeg and to the country beyond the Mississippi.

Amongst Mongoloid groups that followed the most western route was a stock of moderate stature, medium to round head, short and rounded face, which populated Central America and in South America reached the Tropic of Capricorn. Their arrival, unlike that of their immediate predecessors who had penetrated yet further south, appears to have caused widespread displacements of the native population, so that the Amazonian region harbours a medley of discontinuous linguistic stocks and still retains traces of aberrant racial types. The North American plateau was by the same invasion tenanted by peoples employing languages of the Shoshonean linguistic stock. The two eastern routes were followed by other groups whose characteristic descendants were the Iroquois and Algonquin to the east, and the Plains Indians to the west of the Mississippi. These peoples are distinguished from the plateau-dwellers by superior stature, medium to long skull and a long oval face. Length of skull and aquilinity of nose, plateau features which tend to become more pronounced eastwards, may perhaps indicate the descendants of the groups of earliest arrival.

On the other hand, the Pacific coast to the west of the Rocky Mountains and the Cordilleras from Latitude 60° N. to 42° S. received a population that was broad-headed; this phenomenon is conspicuous also in the delta of the Mississippi. On the Chilian coast to the south of the Maule River, where the expansion of the Inca empire was checked by a superior defence, archæological evidence has established the succession of a superior round-headed stock to a very early long-headed population, who as their kitchen-middens show subsisted on shell-fish. The Pacific coast as far south as the estuary of the Columbia River possessed superior

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dug-out canoes. From California southwards the characteristic boat was the balsa, a raft-like structure of reeds of possible affinity to the native Tasmanian craft. The dug-out reappears in the delta of the Mississippi and on the Japura River in north-western Venezuela associated in the former area with palisaded villages and loomless handweaving, and constructed in the latter with a technique, both of which have affinity to the culture of the North Pacific region. All these areas with the exception of the Californian region, which suffered severely in the deterioration of the northern climate, were areas of intensive production which extended both to the food supply and to the manufacture of textiles and utensils. Defensive body-armour composed of wooden slats, of which the origin has been traced either in or to the south of Japan, was worn by the peoples of the British Columbian coast, where inland tribes for the same purpose employed hide. Mexicans and Peruvians fought in armour made of cotton reinforced with metal. Body-armour was worn also in Chili to the south of the Maule. The method of preparing narcotics for chewing by the admixture of ashes or of pulverized shell, which obtained throughout the North Pacific region and also from Venezuela to the southern limit of intensive culture, resembles the preparation of betel in Indonesia. Two remarkable weapons, one the rabbit-stick, a species of boomerang of Indian and Australian affinity, the other a hand-club resembling that of the Maori of New Zealand, belong to the area immediately to the south of California. These features are best explained by the conclusion that the Pacific coast was settled by Mongolians from south-east Asia, who reached the continent in ocean-going canoes to the south of the Aleutian chain.

After the Mongolian settlement of the western coast there arrived from Asia a mixed stock in which Mongolian, possibly also Mongoloid elements, were tempered by a liberal admixture of the Siberian forest stock. These were the Athapascans, amongst whose modern Canadian

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descendants individuals have been noted that by reversion to the western type are white of complexion and fair of hair. The identity of this strain cannot definitely be fixed, but the most satisfactory supposition appears to be that it was akin to the Pamiri branch of the round-headed population of Asia Minor and representative of the dispersion from Asia Minor that had in the palæolithic period brought men of the same type far west through the forests of Europe. The Athapascan invasion effectually sealed the Alaskan gateway. The forerunners of this migration availed themselves of each of the land routes that diverged from the Yukon Valley. Some penetrating south to the west of the Rocky Mountains reached Arizona and New Mexico, and became established on the western plateau. Others following the valley of the Mackenzie were held up to the east of the Rockies by the Plains Indians. Yet others passing to the east of Lake Winnipeg encountered Algonquin groups, whom they pressed back occupying territories defined on the east by Hudson Bay, and on the south-east approximately by the Nelson River. But the majority remained in the north-west territory of Canada and were distinguished by a superiority in the use of fibre and bark, for which it is reasonable to suppose the blonde element in their population to have been responsible. This invasion has been approximately dated to 8,000 B.C.

2

Recent excavations in north-western India have disclosed much of the detail of a wealthy and pacific civilization that at least as early as the first half of the fourth millennium B.C. occupied the region contained within the copper-bearing districts of Baluchistan, Afghanistan and Rajputana. This region was at that time far more fertile than it is now. It was traversed by two great rivers, the present Indus and the former Great Mihran, that fed by the Sutlej flowed into the protected waters of the Runn of Cutch. It was thus capable of supporting a numerous population, which was of Iranian

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race and extended from the northern highlands to the sea, and possibly also into the still more fertile valley of the Ganges. This people followed a great variety of occupations. In part hunters they possessed large herds of the hump-backed Indian cattle and had also domesticated the buffalo, a short-horned and possibly a long-horned breed of ox, the sheep, pig, horse, elephant and two varieties of dog. They used the flesh of tortoise, turtle and crocodile, fresh fish from the rivers and dried fish from the sea, and cultivated both wheat and cotton. They possessed a long-established art of pottery and were expert metallurgists, engravers, modellers, sculptors and builders.

The manner of life in this region is well illustrated in two great urban centres situated in the north at Harappa on the Ravi in Punjab, and in the south at Mohenjo-daro in Sind, some 300 miles up the Indus from the coast. Of these sites Harappa was both the more extensive and the more ancient ; Mohenjo-daro, occupying an area of over a square mile, received a succession of cities of which the three last have been provisionally dated from 3,300, 3,000, and 2,700 B.C., that is to say, approximately from the Elamite, Maer and Agade dynasties of southern Mesopotamia. It is possible that the last of these cities constructed in the period of the Mesopotamian empire of Sargon by the expedient of filling in previous sites with cemented brick outlived the Nordic invasion that reached the Indus about 1,700 B.C. The highest level at Harappa, which may more nearly correspond with the Sumerian invasion of the Persian Gulf head, has yielded evidence of a civilization that in the main essentials of Indus culture was already mature. It contained a great building of burnt brick carefully orientated to the points of the compass and measuring 168 by 136 feet ; within this space were comprised a number of narrow corridors and halls disposed in two parallel series with a broad central aisle. It has been suggested that this edifice served as a storehouse possibly for grain. This level has also supplied the earliest-known example of a cart modelled in

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copper and finished with a hood and a seat for the driver. Mace-heads were worked in copper ; two copper celts had been inscribed with pictographs ; of a number of engraved seals, which may possibly signify the use of a commercial script, one depicts a hunter attacking a tiger from a platform, a second a file of men marching in kilts and helmets, and a third a man bearing a standard worked with the representation of a manger, such as that from which many animals are elsewhere portrayed feeding.

These impressions are supplemented by discoveries at Mohenjo-daro which reveal the same civilization in successive stages of progress, which appear particularly in the construction and disposition of dwellings and in the evidence of increased affluence. In its full development Mohenjo-daro possessed a quarter reserved for religious purposes and supplied with a reservoir for ablution or for the preservation of sacred fish or crocodiles ; this tank was rendered watertight with courses of bitumen and plaster of Paris and furnished with a great vaulted drain by which its contents could be conducted beyond the confines of the city. A wide main street was flanked by rows of rectangular houses or shops, supplied with bath-rooms and with a system of drains that led into street tanks, whence the sewage was probably removed by scavengers. Men of position were dressed in kilts and shawls and wore their hair in the fashion indicated in a golden peruke discovered at Ur. In the lower orders males went naked, but women wore girdles. All classes wore a profusion of ornaments in silver, gold and gold-plated copper. Bronze was in use for razors, chisels, axe-heads, saws, statuettes, bangles and beads. *Objets d'art* included seals admirably engraved with rams, monkeys, dogs and squirrels modelled in glazed pottery. The typical red Indus ware which was remarkably various in form was either undecorated or painted in black on a dark red slip with geometric, vegetable or animal designs. Numerous female figurines in copper and in earthenware attest the local importance of the northern fertility cult.

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The method of mortuary disposal on the Indus though mainly by cremation included also fractional inhumation, that is to say, the burial of a part of the corpse, after it had probably first been exposed to the vultures. The cult evidences include representations of men bearing standards with totemic devices, which are remarkably like those of dynastic Egypt. One seal represents a man seated cross-legged and supported on either side by snake-hooded figures. There was frequent representation in statues and on seals of fabulous animals in which the elephant theme had prominence. Of two limestone statues found at Mohenjo-daro which represent bearded men with rounded crania, thick lips, heavy, prominent noses and very low foreheads, one with eyes inlaid with shell was robed in a shawl patterned with a trefoil design in red ochre. But for the excessively flattened forehead these figures might serve as portraits of Anatolian notables.

The vestiges of a culture embracing in various combinations pottery, polished stone implements, stone statues, elaborate systems of irrigation, megalithic buildings and mining have been traced eastwards from this point through southern and north-eastern India, Assam, Indonesia and Oceania along routes connecting centres rich in such portable wealth as metals, precious stones, obsidian and pearls. In the Pacific Ocean a succession of megalithic constructions extends northwards from the Solomon to the Ladrone and Caroline Islands. Hawaii in the Sandwich Islands is a centre of pearl fisheries and of native agriculture by means of irrigation ; its great temple of Uni is a pyramidal structure standing in a desert plain. The latest vestige of megalithic culture in Hawaii is a stone tomb which has been dated as antecedent to 1,700 B.C., and therefore approximately contemporary with Stonehenge.

Over 4,000 miles to the south New Zealand adds its quota to the megalithic record. In the south tropical Polynesian belt the Society Islands, another centre of pearl fisheries, contain in Tahiti many pyramidal structures in stone ;

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in Raiatea Captain Cook found a pyramidical stone platform without any internal cavity, of which the base measuring 267 by 67 feet and the summit, 25 by 8 feet, was reached by steps on each side ; here he observed images of a bird carved in wood and of a fish carved in stone, which recall the similar association at Lagash. The social organization belonging to this culture is probably represented by survivals in its ancient centres of composite institutions of government and of religion and by legends, that relate to an ancient and superior race of master builders.

This association is effectively illustrated by the archæological remains and legends of Easter Island, the far eastern terminus of the oceanic route, which lies 2,030 miles to the west of the coast of Chili. The antiquities of Easter Island include in addition to pyramidical structures the remains of massive stone houses erected in rows or streets, an extensive system of irrigation and colossal human statues with exaggerated ears. The rows of houses have architectural affinity to the plan of the great storehouse at Harappa, and to the disposition of dwellings along the main street of Mohenjo-daro. One of the long-eared statues in Easter Island has a crown excessively flattened, as though to receive a head-dress, and eyes so socketed as to suggest that they were once inlaid with eyeballs possibly of obsidian ; these features recall the limestone statue discovered at Mohenjo-daro. There is thus ground for associating Easter Island with the cities of the Indus valley. The native population of Easter Island is divided into two hostile groups, of which that inhabiting the western side of the island has a superior clan named Raa, after the Sun. The islanders have a legend recording that the first men came to Easter Island in two bands, one of "Long Ears" the other of "Short Ears." One or both of these bands of colonists appear to have worshipped a god, whose image had the shape of a bird. Not the least remarkable of the Easter Island antiquities is an inscribed pillar which according to native tradition refers to a distant land abundantly supplied

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with water and the meeting-place of beings of two categories, one inferior, the other divine. The inscription is on this authority said to read :

“In that happy land, that beautiful land, where Romaha
“formerly lived with his beloved Hangora, that beautiful
“land that was governed by Gods from heaven, who lived
“in the water when it was cold, where the black and white
“pointed spider would have mounted to heaven, but was
“prevented by the bitterness of the cold.”

We know of no people other than the prosperous traders of the Atlantic sea-board who in the third and first half of the second millennium B.C. can be credited with an equal maritime enterprise in search of portable wealth. The evidence for identifying the gold-miners of Ireland with the Anatolians has been indicated in a preceding chapter ; the statues at Mohenjo-daro suggest men of the same race. We know that the opulent cities of the Indus had contact northward with Elam and Sumer if not also with Akkad. That the men of Easter Island should have recognized a sun god under a name identical with that of the Egyptian Ra suggests contact between the far eastern trade centres and Egypt. Babylonia was in 1,746 B.C. conquered by the Kassites and remained under that unprogressive Nordic dynasty for over five centuries. Egypt was about the same time conquered by the Hyksos and remained under Semitic domination for about a century and a half. It may be assumed that the Aryan invasion of India about 1,700 B.C. destroyed the autonomy of the cities of the Indus. These conquests must have closed the Babylonian and Egyptian markets, and may account for an approximately contemporaneous termination of Anatolian commerce in the far west and far east of the Old World. It is possible that the Easter Island inscriptions may be construed as a valedictory memorial of the withdrawal of the traders from their collecting-grounds in Oceania.

Five discontinuous regions of native America, all dis-

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tinguished by the presence of portable wealth in the form of metals, precious stones or pearls, contain the evidences of an ancient and superior culture, that has affinity to that of the early trading centres of eastern Asia and Oceania. These are from south to north the highlands of Peru from Lake Titicaca to Cuzco with a corresponding ocean frontage from Nasca to Truxillo; Colombia with a main centre at Cartago, on the Pacific coast, and extensions inland to Bogota, and northwards to the western borders of Venezuela, where it has frontage on the Caribbean Sea; the southern province of Oaxaca in Mexico fronting the Pacific; the inland area of Arizona and New Mexico with riverine connection towards Los Angeles on the west, the gulf of California on the south-west, and the Mexican Gulf on the south-east; the river valleys of the drainage of the Mississippi from the great lakes in the north to a main frontage around the delta on the Gulf of Mexico.

Of these regions the fourth, lying at the southern extremity of the North American plateau and easiest of access from the Sandwich Islands, had after receiving an immigration of Athapascan groups shared in the climatic deterioration, which converted the southern district of the plateau into a desert. The southern Athapascans had in consequence been severed from the northern settlements of their race. There had followed a lateral expansion of the hunting peoples of the central plains, who forced the former plateau-dwellers, Athapascans in the north, Shoshoneans in the south, towards the Californian coast. Between these settlements the defertilized centre of California became tenanted by a confused medley of peoples employing a maximum variety of linguistic stocks. The attempt to disentangle this Californian Babel has resulted in a proposal to link together certain areas, mainly coastal and southern, into a new group that includes the inhabitants of the Santa Barbara islands and, after an interval of Shoshonean speech, the Yuman, whose coherent territory lay to the west and north of the Gulf of California. The southern area of Athapascan

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speech was bounded by the Yuman area on its north-west ; it was on all other sides surrounded by peoples of Shoshonean speech, and had at an early stage of the lateral expansion been penetrated by the surplus population of the plains. If it be provisionally assumed that the Yuman areas had remained in Mongolian occupation, it will thus appear that the region of Arizona and New Mexico, known to ethnologists as Pueblo, having representation of the Mongoloid populations of the plateau and the plains, of the Mongolians of the coast, and of the mixed Athapascan stock, was singularly ill-adapted for unification within a commercial enterprise and likely to place a variety of native interpretations on the arrival of unwelcome strangers from the ocean.

There is in legends reported from the Pueblo area a general agreement that there formerly dwelt amongst their ancestors a mysterious race " the children of the Sun," who were of superior power and intelligence and were connected with the sky, whither they at death returned. On the other hand, the Pueblo Indians all believed that they themselves came out of the earth and that the spirits of their own dead inhabited an underworld. The Sia tribe, who were possibly of plains origin, believed the underworld to be ruled by the Spider Woman, who created man. This throws a possible light on the Easter Island reference to a spider folk that attempted to establish itself in Heaven. The Pima Indians of plateau stock, whose territory lay along the eastern coast of the Gulf of California, had also a legend about an intermediate race. They held that men were first created in the form of images by " Elder Brother," and became so numerous that they began to destroy each other. " Elder Brother " then said : " I shall unite earth and sky ; the earth shall be as a female and the sky as a male, and from their union shall be born one who will be a helper to me. Let the sun be joined also with the moon, even as man is wedded to woman, and their offspring shall be as helpers to me."

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The remains of the ancient civilization of the Pueblo area include great disused systems of irrigation, rock fastnesses and mines. The faces of cliffs in Arizona were terraced and the terraces were in some cases faced with low masonry to form the retaining walls for gardens, which irrigation pipes and reservoirs permitted to be flooded. The habitations consisted of stone dwellings frequently built on the precipitous sides of cliffs and approached by long stone staircases or ladders. The fastnesses of Arizona appear to have been designed primarily for safety from attack; they were not only extremely difficult of approach but independently supplied with cultivated produce and water. The mineral wealth of the Pueblo region comprises gold, silver, copper, turquoise and obsidian. An ancient turquoise mine at Los Cerillos, in New Mexico, was constructed in the form of a funnel-shaped excavation more than 300 feet in maximum width, sunk to a depth of 200 feet, and had entailed the removal of tens of thousands of tons of rock. If the rock fastnesses of Arizona served also for the storage of the produce of the mines, they have yielded no sign of treasure. Perhaps, however, this may be explained by facilities for despatch from a centre of exportation on the Pacific coast. From Arizona the Colorado River and the route now taken by the Southern Pacific Railway leads to the port of Los Angeles, to the west of which lie the Santa Barbara Islands, conveniently situated for oceanic contact along the California current with Hawaii. The extinct Santa Barbara islanders belonged to the Yuman group which has provisionally been assumed to represent Mongolian settlements. They were expert fishermen, who alone of American natives constructed plank-built canoes. They inlaid asphaltum with shell and had attained a remarkable proficiency in carving steatite, executing in this material finely wrought vessels of boat shape, and carvings representing a fish with an erect fin. The helpers that the Piman legend represents "Elder Brother" as having found for himself may have been coastal Mongolians and southern Athapascans.

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The Piman account of the making of men from images is duplicated at the mouth of the Mississippi amongst the Natchez Indians, who remained under the control of a group claiming descent from the children of the sun, and crediting the sun with having breathed life on an image, that he had fashioned out of clay. The wealth of the river valleys in the Mississippi system consisted of gold-bearing gravels, copper, silver, salt, mica, chert, flint, steatite and several minerals of value as pigments; the rivers and lakes supplied pearl-bearing fresh-water mussels. Much of the portable wealth of this region was to be had by collection. The natives of the territories above the delta were of the stock represented by the Iroquois, Algonquin and Plains Indians, whose cultures have never approached the level indicated by the most ancient remains discovered in this area. These comprise a large number of mounds, some of which contain mortuary dolmens enclosing stone cists; large areas up to 300 acres in extent laid out in orderly plots for agriculture; and in a northern district adjoining Lake Superior, within the territory of unprogressive Algonquin tribes, a concentration of skilled mining for copper. Copper axes were in this area cast in a socketed form that resembles the type exported to the Baltic from Anatolian settlements in the Carpathians.

The conveyance of products from the delta of the Mississippi to that of the Rio Grande and thence to the Pueblo region would have involved passage through the country of the Athapascan Zuni, who surpassed all Pueblo Indians in the structure of their religious faith. The Zuni, while looking to their numerous gods for the provision of their food supply and for all other things pertaining to their prosperity on earth, believed that at death their own spirits departed to the underworld. They recognized the supremacy of a bi-sexual spirit, the giver of life, a conception which may have derived from Mesopotamia. Of other gods the greatest was the sun, the father of all men by the earth, whom he had married, the father also of the children of the

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sun by a foam cap, that he had kissed. The undertakings of the superior and transitory cultures in the two North American areas are sufficiently similar in character to argue a common purpose controlled by a central administration, but effected with a careful consideration of local conditions. The successful control of many operatives of dissimilar antecedents must have demanded great discretion in the selection of executive officers ; the Mongolian and Athapascan colonies were well situated to supply the co-operation of loyal and intelligent subordinates.

3

The coastal belt of Peru consists of a rainless desert averaging about 20 miles in breadth. Its temperate but enervating climate is controlled by the northward passage of the cold Humbolt current in summer and by dense fogs in winter. It is traversed at infrequent intervals by the fertile valleys of rivers that pierce the maritime chain of the western Corderilla and attain maximum flow in summer, when the mists ascend to the higher ground and are there precipitated in a heavy rainfall. These valleys yield cotton, rice and sugar ; the intervening desert is incapable of cultivation without irrigation. To early Mongolian immigrants these river valleys of the Peruvian coast offered a convenient food staple, a material well suited for loomless weaving and the only directions along which, as population increased, new territory could be taken into occupation. Beyond the maritime chain lay a cold and unproductive tract of highland rising to the central Corderilla ; beyond this range the Sierra consisting of lofty spurs, deep ravines and wide fertile plains led to the eastern Corderilla and the Bolivian plateau. The plains of the Sierra produced wild maize and potato ; the eastern Corderilla was the home of two species of llama, hunted by mountaineer tribesmen, who employed the dialects of numerous linguistic stocks.

Early deposits on the Bolivian plateau at Tiahuanaco to

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the south of Lake Titicaca and even on the coastal belt show that some of these hunters were, like the men of the Chilian shell mounds, long-headed. Their successors resembled them neither in head form nor in speech. The typical Peruvian has a more rounded cranium, of which the crown tends to be domed, and speaks Quechuan. The Aymaran-speaking Colla of Bolivia are of similar type though with a more retreating forehead and unusual length of leg below the knee; they are extraordinarily resolute travellers and are as soldiers capable of route-marches of seventy miles in a single day. It is possible that the Colla represent earlier and more mobile elements of the original Mongolian stock, who had intermarried with the hunting peoples and become physically adapted to the life of mountaineers.

Peru is separated from Mexico by 25 degrees of latitude and by almost impenetrable barriers of mountain. The appearance in each region of a superior culture without tentative antecedents and within limited areas making selection of those resources which both regions possess in common is of itself almost sufficient evidence for the intrusion of an alien purpose. Both regions are rich in silver, copper and gold. In each region vast undertakings were brought to their appointed end by the manifest exercise of a strong directive will, guided by a fine sense of the relation of means to ends and no scruples in the imposition of laborious tasks on a subject population. The conditions of performance in Mexico and Peru were, however, not the same. Greater difficulties in Peru provoked the intruders to a superior output both of initiative and of administration. The results attained were in consequence at all points superior to those accomplished by the ancient civilization in Mexico. Each region supplies the evidence not only of the quarrying and transportation of great masses of hewn stone, but also of the accurate shaping of the blocks without metal so that they should fit closely into the places that they had been designed to fill. But native labour in Peru trans-

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ported greater masses of material over more broken country and the masons of Peru excelled those of Mexico not only in the art of squaring blocks but by finishing them with counter-sunk fittings for copper clamps.

The Peruvian civilization conveys the impression of an army in the field with a base line of communication along the coast and advanced posts, one the stronghold of Cuzco, the other the religious centre of Tiahuanaco, pushed forward into the metalliferous highlands of the eastern Cordillera. None of these centres appears to have been selected with the primary object of supporting a population in comfort. It is true that Cuzco possessed an exhilarating climate and was the centre of fertile valleys and slopes now utilized for fields of maize, vineyards and plantations of prickly pear, but the defences of the ancient city convey the impression of an occupation effected in full consciousness of the probability of hostile attack unless the situation were rendered impregnable. The site occupied a small plateau 5,850 feet above sea-level, flanked and backed on three sides by densely forested mountains. Towards the west it had an extensive outlook over lower ground. Its natural defences were strengthened by massive walls of polygonal masonry, and by a fort similarly constructed but supplied with re-entrant angles that exposed assailants to an enfilade of missiles from above.

The site at Tiahuanaco was naturally less well protected. The religious centre stood upon the Bolivian plateau at the height of 12,545 feet above sea-level amidst scanty vegetation. The buildings which had demanded a concentration of labour scarcely less in volume and greater in technical skill than those at Cuzco stood undefended on the exposed plain. Perhaps their character and situation sufficed to inspire the hill folk with awe. But it may be supposed that the Quechuan population in the neighbourhood of Lake Titicaca was considerable and that the Colla of Aymaran speech, who inhabited the plateau, had already established a *modus vivendi* with the long-headed hunters and were themselves

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equally with the Quechua amenable to the control of the master builders. The constructions of the temple combined features that appear on the far-distant English Downs at Silbury and Stonehenge. They included a great artificial mound of pyramidal form and a large rectangular enclosure, about 90 by 80 yards in dimensions, with sides facing the points of the compass. The enclosure was defined by giant monoliths connected together with an unmortared wall of massive stone blocks. Near the north-western angle of the enclosure, and within it facing east, was erected a great carved monolithic gateway measuring 10 feet in height by $12\frac{1}{2}$ in width, which is the most conspicuous single example of ancient stonework in America. Behind the gateway, and without the enclosure, were three small chambers which may have been used in the service of the cult. The detail of the carving of the gateway on its eastern face had as its main theme a representation of the sun god. This figure grasps in either hand a staff or spear-thrower and is supplemented with conventionalized ornament that includes the condor, puma and fish. The evidence from Easter Island suggests that this sun god may be Ra. The animal themes may be collated with the symbols of deities worshipped in Akkad, Sumer, Elam and Egypt.

Of the coastal settlements Nasca in the south communicated with the northern end of Lake Titicaca and thence northwards with Cuzco by a route now pursued by a railway; Truxillo in the north was, though without communication inland and less well provided than Nasca in respect of natural food supply, apparently a settlement of superior importance. We have no trace of the application, at the date of these remains, of a system of irrigation to agriculture. But the great irrigation works of the subsequent Inca empire may have had their origin in the time of the megalithic builders, whose coastal settlements had need of an extension of the rice production of the river valleys on to the intervening desert. Communication between Nasca and Truxillo was presumably by sea down the Humbolt current,

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that in the neighbourhood of the latter settlement divides, passing westwards towards the Marquesas Islands and north-westwards to the Galapagos Islands, where it connects with a counter-current that skirts the central American coast. The habitations at Nasca and Truxillo, which appear to have been wholly undefended, were built of clay balls cemented together.

There is fortunately no lack of material for the reconstruction of Peruvian life at the period of the megalithic builders. The concentration of labour in the bracing climate of the highlands both at Cuzco and at Tiahuanaco demanded supplies of clothing and food produced by some method more economical than the hunting of the guanaco and vicunia. Transport was required not only for the maize of the Sierra but also for the conveyance to the coast of the metals, which the megalithic builders may be presumed to have exploited, especially in the provinces of Junin to the north of Cuzco and of Puno in the basin of Lake Titicaca. Of the two wild species of llama the Incas regularly drove the vicunia to be shorn for its fleece. They possessed, however, for their own exclusive use two domesticated varieties of far higher economic value, which had been derived by scientific breeding from the more powerful guanaco. Careful selection of stock had resulted in the production of the alpaca, bearing a fleece greatly superior to that of the vicunia, and of the domesticated llama, exceeding the guanaco in strength but inferior to it in coat. The alpaca provided the Incas with wools of two textures, one fine, one long and coarse. These they caused to be woven by loom into cloth and blankets respectively, and to be dyed in bright and permanent colours. The male llama was used as a pack animal or for riding and was capable of carrying a load up to 100 pounds over an average of 12 miles a day through difficult country ; the female llama was valued by the Incas for its milk production and for its flesh. Early Spanish reports testify to the possession by the Incas of vast herds of the domesticated llama ; in the years immediately

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following the Spanish conquest of A.D. 1,520 it was not unusual to see caravans of over one thousand of these docile beasts proceeding in single file, loaded with silver ingots and under the charge of a single native. Since the llamas are unprolific animals, producing but a single fawn at a birth, these great herds faithful to the induced type can only be explained as the result of a long process of selective breeding. Their reservation to the use of the Incas, who claimed exclusive descent from the sun, suggests that they had in some manner connection with the ancient sun worship. The traders of the megalithic period had with the Spaniards an equal need of transport to convey the produce of their mines to the coast, and with the Incas of supplies of flesh and milk and of warm clothing. If they may indeed be identified with the opulent inhabitants of the cities of the Indus, who we know to have been acquainted with the buffalo and with at least two distinct varieties of domesticated cattle, we may perhaps credit them with the specialization of both the domestic breeds of llama.

We know from ancient burials that the Quechua early achieved a superior mastery over the technique of loom weaving, whereby they produced cotton fabrics superior in texture to those native fabrics which in Mexico the Spaniards at first mistook for silk; there is independent evidence derived from coastal pottery of the megalithic period that cotton garments were at that time worn upon the coast. Any evidence as to the personal appearance of the men associated in the undertakings of the megalithic period demands careful consideration. It was the practice of the Salish of the North Pacific region to deform the heads of their children by binding in infancy. The original object was, as has been supposed, to emphasize distinctive characters of head form; to this in certain coastal groups succeeded two further purposes: variety in deformation became a means of creating distinctions between tribes; the degree of binding, which was wholly forbidden to slaves, was so graded as to signify distinctions of rank. There is

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little doubt that this practice, which belonged also to Central America, was indigenous to the Pacific coast, and the appearance in ancient Peruvian skulls of excessive distortion both at Tiahuanaco and on the coastal belt creates a presumption that the persons thus deformed were of Mongolian stock. The local forms of cranial distortion in these two Peruvian districts are noteworthy. The deformation practised at Tiahuanaco enormously exaggerated the Quechuan doming of the skull, that on the coast exaggerated the Collan recession of the forehead and imparted greater breadth and flattening to the skull-cap. It seems, therefore, that Quechuan characters were emphasized in the highlands, characters distinctive of the Bolivian highland on the coast. Such an organization for trade, as has been here attributed to the megalithic period, can hardly have failed to involve a certain measure of exchange between the distinctive populations of the two districts. Hence might arise the desire on the part of natives to emphasize racial characters. But it is also possible that transferences of population in excess of the demands of portage, were amongst the expedients for domination adopted by the master builders. For this practice obtained in the Semitic empires of Mesopotamia, and the Incas, to whose strictly conservative regime we may hesitate to ascribe innovations, relied also in the expansion of their empire on the pacifying device of transferring large numbers of the disfranchized population from one district to another. Such summary methods might have the effect not only of accentuating the natural desire of the Quechua and Colla to perpetuate in exile the characteristics of their ancestries, but of stimulating Quechua, who had been promoted to positions of responsibility on the plateau, to exaggerate the feature of cranial doming which they shared with their Anatolian masters. But the most important evidence of this period is supplied by Peruvian pottery. The potters of Tiahuanaco produced ware of a distinct and unprogressive type; those of the sedentary settlements of Nasca and Truxillo were more

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inventive, pursuing an independent development that provides a sequence of at least three subsequent types of ware. The second of these is a red ware which at Truxillo includes certain water vessels distinguished by a thin spout set obliquely on a horseshoe-shaped handle and decorated with human heads magnificently modelled in relief and unmistakably portraits. Perhaps these jars formed part of the state equipment of dignitaries on their journeys northward along the coast. Four of these portraits are of exceptional interest. Three represent men of a round-headed type with heavy brows, wide face, a long fleshy nose with wide nostrils, a wide thick-lipped mouth and a heavy rounded chin. The suggestion is in each case that of a man of corpulent build and the expression of the features is authoritative and arrogant. In these heads we may, perhaps, possess faithful portraits of three members of the western race of builders concerned in America with the accumulation of wealth for the distant Occidental markets. The fourth example, scarcely less convincing as a portrait, represents a man of wholly different type. The subject was apparently long-headed, with a long, prominent, straight nose and thin nostrils, a clear-cut chin and a relatively slender neck. We should infer the build of the body to have been spare and athletic, the expression is attentive and critical, the attitude with body inclined forward and hands folded combines dignity with submission. If the three former studies are those of rulers, the fourth may be that of a highly placed official of different race, but possibly a Colla of non-Mongolian type. The deposits at Truxillo contain mixed with pottery of the first and second coastal types other forms which derive from the Bolivian plateau. It is possible that these may connect with the final and voluntary withdrawal from the highlands of the men of the ancient civilization along the only route that they could well pursue. This impression is strengthened by the discovery at Oaxaca in Mexico of an isolated example of Mexican ware in which the Tiahuanaco motive of the puma is rendered in a form

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apparently based on a textile pattern native to the Peruvian coast.

The great megalithic period of Peru and northern Bolivia with its progressive arts of stonecraft, weaving, pottery, organized labour, transport, sun worship and possibly chronometry and writing was followed by a long period of stagnation that lasted to about A.D. 1,000. It seems as though the *raison d'être* of the ancient civilization had ceased with the departure of the men who had directed it, and had communicated to the subject population that part only of their science, which it was necessary for their subordinates to possess in the prosecution of their own Occidental purpose. During the interval the greater part of the Peruvian population appears to have lost the sense of co-operative effort, to have made no progress in invention and to have followed the observance of local animistic cults that bore no relation to the worship of the sun god. Their previous submission had converted them into efficient subordinates; emancipation left them without self-direction. The presence and for a time, perhaps, the continued production of portable wealth lacking outlet could not fail to have a disintegrating effect, stimulating crime and intertribal hostilities. The tradition of sun worship, however, survived at Cuzco and probably also on the Bolivian plateau and formed, as we may from subsequent history suppose, a nucleus around which were gathered memories and some local practice of the typical efficiencies of the ancient civilization. The Inca revival of the eleventh century A.D. was by legend variously connected with Lake Titicaca and with Cuzco. It was said that the Incas were descended from a brother and sister, children of the sun, who had mysteriously appeared in the direction of Tiahuanaco. Another legend suggests that priests of the sun at Cuzco engineered a *coup d'état* by contriving the golden apparition of a child, whom they affirmed to be of the same divine origin. Since beautiful maidens were afterwards throughout the empire set aside as brides for the reigning Inca, there may from the first have been careful

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provision for the perpetuation of the divine race. That the Incas might wed at will with their own sisters recalls the practice of the Egyptian Pharaoh. Actually there is little reason for doubting that the Incas themselves were the descendants of a dominant family of Quechua chiefs, who like the Natchez notables of the Mississippi delta claimed origin from the sun.

Inca efficiency was typically administrative and industrial. The Incas informed their subjects that they had before their coming fallen into evil ways and become cannibals, thenceforward they were to be peaceable and possess no wealth. The Inca government was concerned mainly in the threefold endeavour to preserve their own caste in a condition of superior physique, courage and knowledge ; to amass wealth, for which, apart from its dedication to the sun god, they had no productive disposal, and which they ingenuously controlled by sealing the whole of a reigning Inca's riches from further use at his death ; to extend the numbers of the wealth-producing population by campaigns upon their frontiers conducted with the least possible bloodshed, after which the new province was settled by a transfer of population. The Inca method of record by means of the quipu was without value as a chronicle. This appliance consisted of a cord some two feet in length composed of differently coloured threads twisted together and so knotted as to register numbers. Its use was made the material of an instruction in computation that was preserved from the common people as a mystery. The quipu was probably not an Inca invention ; it appears to have been known in South-east Asia about 3,300 B.C. and is referred to by Confucius, who died in 479 B.C. and remarks that "the men of antiquity used knotted words to convey their orders ; those who came after them substituted signs or figures for these words." Such a substitution appears to have been beyond the ability of the Incas, who had preserved, and made privileged, a device which the megalithic sun-worshippers had perhaps communicated to their Mongolian assistants as an

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administrative supplement to their own more civilized arts.

But the sterility of Inca governance was most conspicuous in the attitude of members of the ruling caste towards their subjects which, reflecting that of the Egyptian sovereigns, was possibly yet another instance of their imitation of the means rather than of the purpose of the western traders. The Incas confiscated and held in imperial granaries all foodstuffs, making public distribution from a supply which equalled a three years' demand. Each son of the people was at home instructed in the occupation of his father to which he was required to adhere throughout his life ; all the marriageable boys and all girls who had not been set aside as consorts of the ruling Inca were annually collected to be mated at official discretion in a wedlock that their own inclination could neither determine nor dissolve ; every man was for his work responsible to an immediate superior. There was little injustice but no appeal from the decisions of magistrates. A subject must not be permitted to overwork nor to be idle, to possess property nor to lack food ; he must follow a routine and preserve his health ; it was his business to be productive. He was to believe that the coming of the Incas had redeemed him from many evil habits, and was not to think that his soul could survive the death of his body. He must not, on pain of death, speak evil of the government.

CHAPTER VIII

THE ANATOLIAN HYPOTHESIS

I

OF all races now extant within the margin of the Pacific Ocean the most ancient is presumably the Papuan, which, in a form apparently little modified from that of its migratory ancestors, still occupies its original homeland in the forests of the great island of New Guinea. The Papuan characters of medium stature, long head; retreating forehead, heavy brows and straight to aquiline nose indicate differentiation on the Iranian plateau. The hair, black, coarse and long on the head, abundant on the face, probably goes back to the same origin. Its bushy growth, due to the emergence of each hair at a right angle from the scalp appears also amongst Hamites. The skin, chocolate brown to sooty black in colour, rough to the touch, the wide nostrils, thick lips and the peppercorn growth of hair upon the chest may be accounted pre-negroid differentiations induced by a tropical habitat. But the Papuan resumption of a forest life, and of a diet in the main frugivorous, appears to have been effective not only for the arrest of severe specialization to which their Tasmanian kindred were subjected, but even for the restoration of characters that the plateau had tended to efface. The Papuans were indeed remarkably arboreal in habit. They had an ape-like agility in climbing trees and in running, leaping and swinging through their higher branches. They were in consequence of these activities, which they had possibly developed in pursuit of the tree kangaroo, broad of chest, muscular of arm and very dexterous, but com-

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paratively light in the lower limbs. Their material equipment was inferior even to that of the allied Tasmanian race. The native knife was made of bamboo. They were without canoes. Streams were crossed with the aid of floats consisting of the stems of small trees felled by firing round the base. Lashed together with creeper three such stems composed the raft-like structure of the catamaran, which was either poled or paddled with an unshaped stake.

After an interval, to be estimated rather in millennia than in centuries, another western stock penetrated the Pacific basin through the Malacca Strait and passing eastwards to New Guinea appropriated territory along the reef-protected shore that extends between Cape Possession and Orangerie Bay. These men, the ill-provided advance guard of the Australoid migration, had, like the Papuans, effected their passage by land, and were accompanied by their wives and children. Their dugout canoes, unfurnished with outriggers, were too unstable for the adventurous navigation of shark-infested waters; their fishing nets were trawled by waders in shallows. They made good their footing by force of arms and, since the forests to the west, east and north of them remained in Papuan possession, became isolated from friendly contact. More advanced than their predecessors in plateau form and exposed by their semi-aquatic habits to tropical specialization, which a reduced dietary may have expedited, these intruders became negroid. As their population increased they were under the continual necessity of enlarging their borders at the expense of the more numerous Papuans and in warfare captured many Papuan women. Mixed marriages thus combined with negroid specialization to obscure the original characters of their race. The coastal settlements gradually became the homeland of a new stock to which the intrusive fishermen and the aboriginal foresters were jointly ancestral and the latter increasingly contributory.

This proto-Melanesian race was by temperament morose, quarrelsome and taciturn. The anticipation of danger both from the forest and from the sea rendered them so

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fearful of malignant spirits inhabiting trees and deep water that they gave little thought to the spirits of the departed and appear to have been negligent in the disposal of their dead. From their Papuan consorts they had little to gain in culture that was not domestic and conservative. In respect of magic the Australoids probably trusted in the lethal efficacy of weapons pointed with human bone ; Papuan women may have added belief in the residence of spiritual influences in stones. Gradually the Melanesians acquired from this contact other convictions, which became impressed upon their culture and contributed to their sense of racial individuality and possession. Captured wives were a form of property that required to be guarded. They might be unfaithful to their masters or abscond with their children : they were suspected of witchcraft. Death was the obvious penalty for unchastity ; the tatooing of women may have been the mark of servitude. The children of Papuan mothers were held to be of Papuan rather than of Melanesian race ; they might be secured from going native by insistence on their marriage with Melanesians. Thus may have arisen the institution of exogamous moieties and a reinforcement of the practice of reckoning descent through mothers.

The Melanesians must have remained for thousands of years cut off from contact with any superior culture. As their population increased they were under the continual necessity of extending their boundaries. These they advanced first, beyond the limits of the reef-guarded shore, to the extremity of the western peninsula of New Guinea, subsequently beyond the confines of the mainland. Certain groups passed from the southern promontory of the peninsula to three small islands that were almost continental and there established fisheries. Others, with a fortitude that became legendary, traversed some thirty miles of open sea, which separated the northern promontory from the considerable island of Normanby, one of the D'Entrecasteaux group. Normanby became the centre of a distinct mythology relating to the adventures of heroes and of belief in the

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departure of souls at death to a spirit land situated in the top of a lofty mountain. Women were accorded a superior status and retained a high level of chastity ; witchcraft was prevalent and connected with the sea. There was a renaissance of the characteristically Australoid proclivity for barter.

Meanwhile the Melanesian homeland became extremely congested in population and fell in urgent need of economic succour. Individuals in whom Papuan temperament was dominant began in increasing numbers to revert to the life of the forest. Hence arose a pariah population of bush dwellers, who were in Melanesian estimation excessively stupid. Moreover infanticide became a widely spread Melanesian practice, with a tendency to take a variety of forms. The first-born might be destroyed on the assumption that it must prove inferior in health. One of two twins might be killed as entailing too great a burden on the mother. A family might be limited ; if four children were regarded as a sufficient tax on its resources any subsequent child might be destroyed, if the four first children were girls the youngest might be killed on the birth of a boy.

Relief reached New Guinea perhaps towards the close of the fourth millennium B.C. from men who arrived in outrigger canoes, that carried few women. The infusion of a new strain into the already composite Melanesian race is indicated by the appearance, whether in groups or sporadically, of men whose brown skins, long faces, regular features, absence of heavy brow ridges and a tendency towards redness of hair are divergent from the characters both of the Papuan and of the Australoid stocks. A similar type, little subject to variation and therefore presumably pure, provides the main population of Baluchistan and spreads northward into Afghanistan. It is superimposed on the jungle population of the Deccan, where it is associated with the Dravidian group of inflected languages of pre-Sanskrit origin, that includes Tamil. Most Dravidians are agricultural in habit, though some are pastoral. Amongst the latter the Toda of

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Mysore have specialized a decadent survival of such a dairy cult as in the fourth millennium B.C. existed in the Sumerian city of Ur. Their religious beliefs include the conception of the passage of ghosts into animal forms and local rituals of snake and of tree worship. It is certain that Dravidians at one time formed a major element in the population of Further India and South China, and it is probable that they were formerly also established in the Chutia Nagpur tableland to the west of the delta of the Ganges. The term Dravidian is derived from Dravida, the people who, according to Vedic history, offered the main opposition to the Aryan-speaking invaders who entered Hindustan about 1,700 B.C. To the Dravida may be ascribed the application of irrigation to the cultivation of rice in the valley of the Ganges.

The Dravidians may be credited with having reached New Guinea with a ripe experience both of less advanced peoples and of intensive agriculture. Their arrival has the appearance rather of a spontaneous exploration in search of new territory for cultivation than of a migration enforced by superabundance of population. They were few in number and pacific in intent, but they carried the bow, a superior weapon of defence, and came in superior craft from the dangerous sea. They had no fear of the forest, for they worshipped trees and evil snakes. They could cause food to grow at will and so relieve famine. They cooked an unknown, western food, the root of the taro or arum lily, in pots which did not burn. Doubtless in Melanesian estimation they were accounted exceedingly powerful magicians.

Needing land, labour and wives, the Dravidians proceeded to convert prestige into ascendancy by extending their methods of peaceful penetration to all sections of the native population and to most of the few indigenous industries. The completeness of their success is testified by the conversion of the whole of the Melanesian homeland and its colonies to Austronesian speech. This process of appropriation was, however, but the means that they adopted for the attainment of agricultural prosperity,

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which could not be attained on the native basis of proto-Melanesian society. The new industry entailed the readjustments which would convert a population from food collection to food production, that is to say, from a constitution that was savage to another that was at least formally barbarous. The immediate tasks to be undertaken were obvious. Gardens must be cleared, cultivated, if necessary irrigated; indigenous plant foods must be explored, if suitable improved. The change effected by the Dravidians in Melanesian society was gradual, but had little resemblance to the process of natural growth. In effect Dravidian methods were tyrannical and revolutionary. The fishermen were not without justice assumed to be the least helpful element in the native population and the Dravidians, having devoted their first attention to the reclamation of the reactionary pariah population, proceeded to establish profitable contacts with the dexterous and muscular Papuans.

The Dravidian need of wives was satisfied by an extensive polygyny secured by the appropriation of marriageable girls from both Melanesian moieties and from all sections whether Melanesian, pariah or Papuan. Hence arose ultimately a dual organization in which the original moieties were superseded by the division of the population into superior Dravidian and inferior non-Dravidian classes each of which was both matrilineal and exogamous. Incidentally this new system led to two results, neither of which was wholly favourable to further progress. The first Dravidians to arrive had been men of adult age. As this generation passed away authority tended to remain with its survivors and Dravidian government took the unspontaneous form of a gerontocracy consisting of independent village communities directed by the oldest male representative of the Dravidian class with the aid of such elders as he might choose to consult. The second result was a promotion of the status of women combined with great relaxation of sexual morals. The polygynous Dravidians accorded superior status to their wives but were not concerned, like the Melanesians, to

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invigilate their fidelity. The breaking down of the old moieties and the shortage of wives for younger men combined to produce free intercourse between the unmarried.

Nevertheless, Dravidian dominance was probably productive of a considerable recovery of Melanesian physique. Agriculture was a pursuit more natural to the forester than to the fisherman ; under Dravidian direction the Melanesian race, instead of losing individuals of Papuan temperament, probably received considerable accessions of the unadulterated Papuan stock. Nor were the Dravidians unwilling to promote the new spirit of initiative that congestion had evoked amongst the more adventurous part of the Melanesian population. They were interested in a movement which tended towards the population of virgin territory and in the position to encourage it by the supply of outrigger canoes. It was a part of Dravidian good fortune that their superior culture appealed to the most progressive element amongst the fishermen. To the native mind the idea of combining the plain dugout with the Papuan float was unlikely to occur. This conjunction having been supplied by the Dravidians, to whom local prejudices were negligible, was, however, comprehensible ; the resulting increase in stability was obvious ; the virtue of the contrivance, of which the Dravidians probably alone grasped the principle, was popularly ascribed to magic. The new model craft became available for the more distant conveyance of colonists. The personnel of the colonies sent out by the Dravidians was doubtless carefully selected. While the Melanesian colony in Normanby certainly became an early centre of Dravidian influence and developed a locally dominant dialect of the Austronesian language, the Dravidians chose for the direction of their own colonial expansion another route towards the north, through Goodenough Island, which contained excellent obsidian. This route led to the exceptionally fertile Trobriand Islands, of which it may be conjectured that the native institutions represent the stereotype of a Dravidian settlement belonging to the third millennium B.C.

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It is not to be supposed that Dravidians had in New Guinea severed connection with the much greater body of their kin that lay to their west in Indonesia. Reports of the prosperity of their eastern colonies may have attracted further Dravidian immigrations, that brought with them additional supplies of taro; products of the Bismarck Archipelago may have passed westwards. Such contacts were likely to attract the attention of Anatolians who having circumnavigated the Deccan were already established in Chutia Nagpur. Anatolian prospectors passing through the Malacca Strait discovered in New Guinea conditions highly favourable to their commercial purpose and in the Dravidians a population whose language they already understood and whose abilities they had previously explored in the valleys of the Indus and of the Ganges.

2

The evidence supplied by the basin of the Pacific is critical for the validity of the hypothesis of Anatolian intrusion that has in previous chapters been used to synchronize and explain the industrialization of widely distant regions. Did this intermediate area fail to contribute to the identification of the agents responsible for the early civilization in America, or to the analysis of their methods, the attempt to associate within a common purpose the vestiges of a superior culture that once flourished in Peru, Arizona and the valley of the Mississippi would rest on a basis too mechanical to merit historical consideration. With that failure the conjectures that statues discovered at Mohenjo-daro and Easter Island and pottery discovered at Truxillo represent individuals of Anatolian race, would become invalid. On the other hand, should the Pacific evidence be proved corroborative there is *a fortiori* ground for the ascription of the megalithic remains of Cuzco and Tiahuanaco, of Avebury and Stonehenge to the same agents.

It is unlikely that the Anatolians reached Melanesia

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inadequately informed as to the situation that existed beyond the Torres Strait. Sensitive to the demands and prescient of the future of their home markets they were indifferent whether the commodities in which they traded served the purposes of industry or embellishment or were to be had by collection, excavation or manufacture. Much of their early traffic in the west had been in pottery and obsidian; they were aware that in order to establish a commercial footing in a new centre it was necessary to supply local demands; natives could be persuaded to part with supplies and to render services in exchange for necklaces and other ornaments of small intrinsic worth. Goods for distant export must, however, be of high value in proportion to their bulk and not liable to deterioration in passage. The Indonesians may have transmitted to Further India rumours of the existence of pearl fisheries beyond the Bismarck Archipelago. As the Anatolians passed eastwards in their large plank-built sailing vessels they skirted the Gulf of Papua, where they had opportunity to take stock of the aboriginal forest population, which presented according to Dravidian report the main source for the recruitment of labour. To the experienced traders the poverty of Papuan equipment was negligible. Few indigenous peoples could be expected to take their appropriate place within the commercial system until their native implements had been improved and their technique standardized. It was more important that the Papuans, on whom they must rely for the supply of timber and tackle necessary to the refitment of their vessels, were peaceable, muscular and dexterous.

Traces of Dravidian agriculture began to reappear beyond Cape Possession, where the Papuan catamaran was replaced by the plain Melanesian dugout. Beyond Orangerie Bay the evidences of Dravidian ascendancy increased; patches of cultivated gardens added colour to the forest and dugouts were provided with outriggers. These canoes were, however, small and too unseaworthy for commercial use. It was more important that their liability

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to capsize had rendered the fishermen extremely expert as swimmers and divers ; it was on this labour that the traders must rely for the exploitation of pearl fisheries.

As, however, they entered the network of islands, into which the southern promontories of the mainland dissolve, the signs of Dravidian influence diminished, for this was a cul-de-sac of native expansion. The tide of colonization had turned northwards pursuing the arc of islands that contain the Bismarck Archipelago ; the eastward islands, separated by continually increasing intervals of ocean, terminated at Laughlan Island, beyond which stretched a wide expanse of about 300 miles of open sea. The Anatolians could hardly fail to note the lack of enterprise of the Melanesian fishermen, who in this area were reluctant to quit sight of land or to remain afloat at night. Such timorous navigators were not fit to be trusted with the transport of valuables.

A passage due east from Laughlan Island brought the Anatolians to the central division of the Solomon Islands, where, between the large islands of Guadalcana and Melanta, lay Florida, a small island well forested and deeply penetrated by sounds and channels which promised to be excellent for the construction and refitment of vessels at the water's edge. To the north-west lay Ysabel, to the south-east San Cristoval. Here was a second cul-de-sac of native expansion, for another interval of 300 miles of open sea separated the Solomon Islands from the New Hebrides and divided the Melanesian arc into a northern and a southern section. The Solomons were thinly populated by Melanesians who, having worked their way round the northern boundary of the archipelago, had neither the incentive nor the ability to proceed further.

In default of Dravidian regulation Melanesian society was in this terminal region of native expansion peculiarly liable to disintegration. It had never, even in its congested homeland, been established on a tribal basis ; the large and uninhabited islands of the Solomon group supplied none of the

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conditions which had there imposed upon it a mechanical cohesion. It may be inferred that the first Melanesian migration to complete the circuit of the Bismarck Archipelago contained a more than average preponderance of the Papuan element. Arriving with an attenuated culture and in small groups these aboriginal Solomon Islanders encountered no opposition save that of the marine barrier. Their vagrant propensities, reinforced by land travel, were subject to no restrictions and had induced them to scatter within the virgin forests, that offered shelter from an excessive rainfall and abundant supplies of bread fruit, nuts, coconut and pigeon, which they had no need to supplement by the arduous exploitation of fisheries.

The Anatolians failing to discover in Florida a sufficient population for the organization of the labour necessary to the refitment of their vessels decided on retirement to the much larger island of Ysabel, and there set up their own experiment for the reformation of a Melanesian society that had gone completely native. The district of Bugotu at the southern extremity of Ysabel supplies the record of a dual culture that included defensive habitations of two distinct orders and obviously distinct origin. The first of these consisted of arboreal dwellings constructed on bamboo platforms in trees, the second of fortified villages situated on coralline rocks and surrounded with stone walls. The probability that the peoples thus associated were Papuans and their Anatolian instructors is increased by the native tradition reported from Florida that Bugotu was the source whence derived an organization which in character departs both from Melanesian and Dravidian usage and has Egyptian affinities. This expedient took the form of the admission of men to a society which practised secret rites involving the use of images of man, of the sun and moon, of birds, fishes, sharks and crocodiles. In its modern form the society exacted neither property qualification nor contributions from its members but branded the novices with fire-sticks. It may be assumed that the first initiates were recruited as

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craftsmen by compulsion and that they received instruction in carving. Having thus disciplined a nucleus of efficient workers in wood and stone the Anatolians were in the position to press forward with the refitment and construction of vessels in Florida. Floridan legend tells how one Siko arrived there from Bugotu in a canoe that contained his property and twelve companions. To each of these he gave control over a separate village, saying to them : " Let us do things as we did at Bugotu."

The secret society that has been traced to Bugotu belonged in Florida to a much more extensive organization. It is difficult to avoid the conclusion that the twelve villages, over which Siko's mythical companions ruled, represent a numerous and progressive population regulated by experimental institutions many of which were subsequently worked out in greater detail and with a greater precision elsewhere. The canoe builders of Florida remain to this day proficient in a technique that is not of Melanesian origin. The Floridan adze is headed with stone, the Melanesian with shell. The Floridan canoe is less seaworthy than the Melanesian dugout and unlike it carries no sail, but it is plank-built and requires more skilful construction. It can hardly be an accident that the Floridans and the Santa Barbara islanders, of the Californian coast, resemble each other in constructing at a local terminus of native navigation a similar form of craft that departs from native usage and closely resembles an Occidental model. Moreover, there is reason to believe that the canoe builders of Florida, while perfecting the plank-built canoe, were also concerned in the modification of the outrigger dugout with the object of increasing its freightage and stability. It is certain that superior types of native craft have long reached the islands that lie to the west of Laughlan from the direction of the Solomon Islands and that the modifications by which they are distinguished were the work of men expert in plank-building and in the use of forest materials. The fitting of all dugouts of the improved models with a mast and sail

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followed, and was probably an adaptation of Occidental equipment.

The habitations of Florida resemble those of Bugotu only in that they are of two distinct orders. It is probable that some part of the newly trained levies was diverted from canoe building for employment in the construction of timbered buildings. Canoe houses in Florida serve as meeting-places for men, as places for the entertainment of strangers, and as sleeping quarters for unmarried boys. Associated with the unpretentious dwellings of ordinary villages are the important timbered houses of chiefs. These are constructed on poles which protect the inmates from floods and from the infectious exhalations of putrescent vegetable matter that arise from the tropical soil.

The conversion of Florida into a populous colony that combined under Anatolian direction Papuans, Melanesians and Dravidians could not fail to require besides transport careful provision in respect of commissariat, clothing and governance. The problem of feeding a subject population employed in organized labour may have induced the ruling class to experiment in various forms of monetary exchange, an expedient for which the Melanesian usage of barter provided no equivalent. The most obvious medium was shell money, a material which combined several important advantages. It stimulated manufacture, was attractive to natives and placed a convenient though fictitious value on the by-products of the pearl fisheries, which it was the object of the traders to exploit. But the produce that could be purchased from natives was in supply too casual to support an industrial community and in kind not wholly convenient for the victualling of vessels commissioned for exploration. The possession of superior native craft led to an extension of the fishing industry, in the prosecution of which the Melanesian fishermen, upon whom the Anatolians relied for the supply of divers, became more adventurous. The dugong was taken off Ysabel, shark and porpoise off Florida. These additions to the native food supply were

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welcome, the increasing maritime enterprise deserved encouragement ; porpoise teeth were recognized in Florida as a currency of higher denomination than shell money. The Dravidians probably brought with them supplies of taro and improved yams. The Anatolians themselves may be credited with the importation of the dog, pig and domestic fowl ; dog's teeth became the highest denomination of Floridan currency.

It is unlikely that the Anatolians failed to realize the importance of female labour to the permanency of an experimental society. Domestic arts are not easily modified ; once developed they tend to become fixed. The cooking of the new foods required an adequate supply of utensils and the ruling caste had need of superior clothing. We may assume that the Anatolians had the female population instructed in pottery and in the use of the loom. The social organization of Florida was so far faithful to Melanesian and Dravidian practice as to rest upon the basis of exogamous classes that counted descent through mothers. But the primitive simplicity of a dichotomous division into moieties, that had sufficed for the Melanesians and had been utilized during the Dravidian ascendancy in New Guinea, was inadequate for the classification of the composite population and co-ordinated industries which had been centred in Florida. Numerous classes were therefore distinguished and the recognition of affinities between persons of separate class was added as a supplementary control over birth rates. To these early regulations may be ascribed the wealth of consanguineous detail that has remained a distinctive feature of Melanesian genealogies.

The Anatolians were neither numerous nor content to remain longer in Florida than was necessary for the organization of labour and the provision of transport. It was, therefore, important that native discipline should become as soon as possible automatic. Means must be devised, whereby the masters should be secured in a position of unassailable prestige and the workmen at the same time released from

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the fearfulness that surrounded them with superstitious inhibitions. The most obvious expedient was the creation of religious sanctions calculated to stimulate loyalty without impairing initiative. The Anatolians had therefore resort to Egyptian practice and instituted a rudimentary form of official religion. The natives were told that the authority exercised by chiefs derived from their connection with certain powerful spirits, of which the most important belonged to the sea, where they inhabited sharks and other animals ; the names of these incarnations were to be used by natives in asseverations as a form of oath. The social structure was in addition regularized by tentative approaches towards totemism, ancestor worship and taboo.

3

It is not to be supposed that the task of organizing labour in Ysabel and Florida was allowed to monopolize the attention of the Anatolians or to divert them from the object which had brought them to the Pacific. The discovery of pearl fisheries in the uninhabited island of Santa Cruz which lay to the east of the interval separating the Solomon Islands from the New Hebrides was the occasion of an experiment that testifies to the efficiency and permanence of the instruction that had been imparted in Florida. For the Anatolians appear to have established in Santa Cruz a very early colony which was from the first self-supporting, and has actually outlived the original purpose of its settlement for some 4,000 years.

Native legend states that the taklai bird formerly hatched out a brood by a stream which carried the young out to sea. They were taken in charge by various fishes and having reached Santa Cruz became the founders of its local clans. The colonists who appear to have represented all the strains congregated in Florida were liberally equipped. They were supplied with a new form of craft which had been specially designed for pearl fishing. This consisted of a long

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and very narrow dugout without plank gunwales but fitted with a sail. The hull supported on either side of the mast elevated bamboo platforms to serve as a convenient stage for divers. Its stability was secured partly by a very large outrigger suspended from struts that were attached to one of the platforms, partly by balancing the weight of the crew, who were carried on the platforms and not in the hull. The fishermen trained to navigate this unusual form of vessel had received instruction in practical astronomy. The Santa Cruz craftsmen were provided with a shell adze identical in shape with the stone adze used for plank-building in Florida. They applied their dexterity in wood-carving to the ornamentation of wooden bowls and head-rests. To this domestic art they added subsidiary decoration in colour and a liberal use of fibre tags and tassels. The construction of the local craft required special proficiency in the use of ties.

Women had been instructed in the use of the loom and occupied a status of importance that included the holding of property. A native of Santa Cruz treats his father's sister with respect. It is she that in one district at least selects his wife, indemnifies the girl's mother for the loss of her service and has main control over his children in infancy.

The colonists were supplied with taro, yams, the dog, pig and fowl and clear directions as to the foods ceremonially prescribed in the case of each class. This colony exceptionally furnished with model craft, which could hardly have been evolved without Dravidian assistance, appears to have been placed also somewhat exceptionally under Dravidian control; for the Santa Cruzans employ an archaic dialect of Austronesian speech, that is without resemblance to examples of aboriginal Melanesian speech reported from the north of the archipelago and also differs materially from the language which under Anatolian influence became the *lingua franca* of the Melanesian arc.

There was added a comprehensive ritual common to all classes but reserved for men, which combined within a

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single cult, nature and ancestor worship and the annual celebration of the harvest. The feature of head worship in this ritual is possibly of much later origin. When annually the taro harvest is ready to be dug the adult men construct a special house and furnish it with a double row of twenty skulls. All the chiefs and men of the locality then assemble and remain standing while the senior chief officiates at a sacrifice of first fruits, making the following prayer: "May the heads of the dead, may the moon and the mountain guard us from our enemies and may they not hurt us. May the heads of the dead, the moon and the mountain give us plenty of taro, yams, tourago, bread fruit, nuts, coconuts, pigs turtle-shell." After each chief has in turn repeated this prayer the food offerings that have been placed before the skulls are distributed to the people who sit down and eat.

As Florida succeeded Ysabel as the Anatolian headquarters so Florida in turn became of inferior importance to San Cristoval, the most southern of the Solomon Islands. This considerable island was in situation well suited to provide at once a base for further operations towards the east, a convenient passage towards New Guinea on the west, and a centre for the control of the settlements in Ysabel, Florida and Santa Cruz. An important harbour at its southern extremity faced the wide expanse of untravelled sea that separated the Solomons from the New Hebrides.

Local legend represents the arrival of the Anatolians in San Cristoval as having taken place at the time of a great flood of waters the combined effect of rainfall and of an inundation of the sea. The strangers were thus borne far inland in a great canoe that carried, in addition to men and women, pigs and dogs. It is possible that these features of the legend are of Mesopotamian origin. Conflicting versions describe the island as then uninhabited or depopulated by the flood or supporting in the interior an excessively foolish people, whose adventurous disposition led them into all sorts of absurd predicaments from which they consistently failed to extricate themselves with credit. These Masi were,

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however, dexterous in carving and in the construction of canoes, but bad navigators; they entered the service of masters by whom they were employed in the completion of important buildings in stone.

As the Anatolian prospectors passed through the reefs that protect the eastern shore of San Cristoval, it is probable that they encountered natives afloat in frail catamarans which consisted of five or six stalks of sago palms lashed together with creeper. As they ascended from the shore they emerged on a limestone plateau covered with scrub and so deeply cut through by the canyons of torrential streams that their parties were frequently, though within easy hail, unable to unite until they had made a circuit of several miles. Upon this plateau the Anatolian prospectors may have encountered unprosperous Melanesians who found shelter beneath rocks or behind screens of palm leaf and subsisted mainly on nuts and roots. The western edge of the plateau was shut in by high volcanic mountains. Setting sail from the southern harbour the prospectors discovered in the New Hebrides the pearl fisheries of which they were in search.

The Anatolians envisaged in San Cristoval a problem sufficient to enlist all their previous experience in Melanesia. Clearly the New Hebrides must be furnished with a population that could be trusted to become rapidly self-supporting and commercially productive and to remain loyal. San Cristoval though its soil was indifferent and its timber poor must therefore be converted into a school and a centre for emigration. A selected population must be received thither from the mainland distant some 600 miles by sea and passed south over some further 300 miles of ocean. The procedure adopted by the Anatolians was designed to preserve an economy of time. Methods tested in Ysabel, Florida and Santa Cruz were simplified to meet an emergency that demanded the training of recruits in loyalty and industrial efficiency with the least possible delay. Dravidian assistance was extensively requisitioned.

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The Anatolians established themselves in the rocky promontory of Arosi that occupied the northern end of the island and there set the natives to work upon important labours in stone, that included the construction of platforms, walls, statues and revetted wells. As new levies of emigrants were received from the west in outriggered dugouts of Floridan construction and furnished with plank gunwales and sails, they were classified and instructed. The area of reception was made impressive to the Melanesian imagination. The recruits were taught to believe that the stones by localizing spirits reduced the danger of their immediate surroundings. They may also have been encouraged to suppose that distant fastnesses were the resort of malicious spirits known as Kakamora, who were less than human both in stature and in nature and came forth to track down men by scent. So soon as the levies had been disciplined in loyalty, self-reliance and dexterity they were passed southwards to a central district which was better suited to agriculture and there placed under Dravidian instructors. Finally they were exported from the southern harbour in the vessels in which they had arrived and furnished with the pig, fowl, taro and yams, together with the stone-headed adze. The Dravidians of the central area attended in Arosi to observe Anatolian methods of governance and instruction.

Native education was in Arosi organized by the Anatolians through the establishment of several exogamous classes. Of these all but two were totemic, and all but one matrilinear in descent. The instructors prudently adopted for themselves an organization outwardly correspondent with that which they imposed on their subjects and required the Dravidians, when in Arosi, to follow suit. The individual superiority of the masters was beyond question and in need of no institutional protection, the desire of workmen to resemble their masters was natural and to be encouraged. Arosi totems were in all cases birds, which the workmen were taught to regard as ancestral and to worship ; perhaps

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the names of these totems were applied also to distinguish the canoes used in transport. The Anatolians constituted themselves a separate class and selected as their emblem the kingfisher of which the brilliant plumage may have served for currency, as did that of parrots in Santa Cruz and that of fowls in the Banks Island. Being without women of their own race they contracted marriages with natives so that their class was thus exogamous. It was to the Anatolian interest both for the modification of the native stock and for the spread of domestic arts to marry many wives, but they may have scrupled to regard their children by native women as themselves Anatolian. This first Anatolian class was thus in origin perhaps actually without recognized descent, but recruited by the adoption of selected half-bred boys. If so, it established no exception to the rule by which Melanesians reckoned their descent through mothers. To the kingfisher class may be attributed a special sanctity which in San Cristoval, as in Florida, attached also to the shark and frigate bird. The bird assigned as totem to the Dravidian class in Arosi was by contrast small and inconspicuous.

The first non-totemic class to be established in Arosi appears to have consisted of fishermen. It possessed a sacrificial bowl, carved with representations of a bird and a fish and used for the exposure of food before a fishing expedition. This ritual was completed after the manner of Santa Cruz by the consumption of the offering by the worshippers. We may suppose that the members of this class were Melanesians, who had been specially selected for the New Hebridean fisheries and were regarded as already advanced in proficiency. The education of which they were specially in need was such as would fortify their courage and initiative, by securing the conviction that they were favourably related to the spirits that inhabited deep water. The first indication of the arrival in San Cristoval of a further body of Anatolian traders, who may have been recent arrivals from the far west, is provided by the division

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of the Anatolian class into two. The new subclass adopted the hawk as its emblem, thus making a first departure towards Egyptian sky worship. This subclass admitted the children of Anatolian fathers to Anatolian ascendancy by reckoning descent through fathers. It is possible that the new arrivals were responsible also for the modification of the Anatolian form of disposal of the dead, which had previously been either by incineration or canoe burial or the commitment of corpses to the sea to be devoured by frigate birds and sharks. The Melanesians interred their dead in a restricted posture ; in the Dravidian centre of San Cristoval these interments were made round trees. The Anatolian innovation consisted of the erection of a mound pierced by an oblique shaft which in accordance with Egyptian practice led down into a stone-lined vault, where the corpse was extended at length.

A still more remarkable innovation followed which invested the new form of burial with mystery and gave prominence to the Anatolian practice of ancestor worship. This change took the form of the establishment of a further class that was frankly non-totemic and traced its origin to the issue of a woman who had died and been interred but had subsequently either returned to life or had in death given birth to a child within the burial chamber. The class credited with this miraculous inception was matrilinear and was known by the native word appropriate to ghosts. It served for the extension of Anatolian rights to the children of Anatolian mothers and its establishment concludes that part of the organization of Arosi that can be supposed to have been inspired by the desire to educate natives.

But the evidence of the Solomon group, even when that of Santa Cruz is added, leaves much information to be desired as to the scope and character of Anatolian education in Melanesia. Its indications embrace curriculum, the materials and methods of instruction, the classification and transfer of pupils, the supply and training of teachers, but in a form that is somewhat narrowly administrative. We

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receive the impression of a machinery that was commendably economical and probably efficient, but are left in doubt whether its employment was theoretically sound or practically beneficial. Fortunately the islands that lie immediately to the west and south of the Anatolian headquarters supply evidence that throws considerable light on these wider issues.

The network of islands that extend eastwards from New Guinea to Laughlan was of peculiar importance to the traders. It was thence that they drew the labour necessary to make the southern section of the Melanesian arc productive. This region also remained critical for the homeward transmission of their products throughout the period of their eastern activities. Here then we may look to find the traces of an organization as perfect as Anatolian ingenuity and experience could contrive. The evidence is wholly to the effect that Anatolian policy must be dissociated from the desire to hold lands except for the purpose of trade. In raising levies for the New Hebrides the Anatolians decided rather to attract volunteers than to impress statute labour. Their sources lay wherever the several elements of the indigenous population could be discovered in the most complete independence, not where they were through Melanesian or Dravidian mediation culturally the most advanced. *Divide et impera* was a sound maxim for masters who desired, above all things, to secure loyalty.

The Anatolians, therefore, proceeded to map out the area of recruitment. From Laughlan as vertex they traced two sides of a triangle of which one passed westwards through Woodlark Island to the extreme south of the Trobriands, the other south-westwards through Massim to Tube Tube, an island about thirty miles distant from the southern promontory of New Guinea. The third side of the triangle, which connected these two points, passed through the Melanesian colony in Normanby and the rocky islands of the Amphlett group. Along the sides of this triangle the Anatolians set flowing westwards from Woodlark a stream of folk-lore and of magic appropriate to canoe building,

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south-westwards from Laughlan a supply of superior canoes. These two currents met at the Melanesian colony in Normanby. The base of the triangle was strengthened with industrial centres established at Tube Tube and the Amphletts, neither of which was economically self-supporting. The Dravidians of the Trobriands lay mainly outside the triangle but were encouraged to make their agriculture productive in excess of local needs, so that the north-western angle of the area might become a depot for supplies. These were attracted south to the Amphletts, where the natives were secured as monopolists of a superior pottery. Tube Tube also purchased provisions through the export of ware. This colony which lay in the direct route of transmission westwards from Santa Cruz and San Cristoval was in virtue of its geographical position of extreme importance to the Anatolian scheme. It was consequently promoted to the dignity of a control station for the whole system of inter-communication. From this centre it was possible on occasion to suspend all purely local traffic by the imposition of mortuary feasts and taboos.

But the area thus defined must achieve stability. Of the two purposes which it served, the earlier need of recruitment became subordinate to the later necessity of transmission. The Anatolians conceived the plan of converting the whole area into a school of commerce, which, like the industrial centre of Arosi, was brought within Dravidian observation but was too important to be committed to Dravidian control. Their programme survives in a unique system of exchange known as the Kula, which imparts to the whole area a kind of artificial nationality unsupported by natural antecedents in the form of tribal government, and retains in native estimation a significance that is almost ritualistic and expressly dissociated from normal trade by barter. The Anatolians put into circulation around the periphery of the triangle two articles of fictitious value which travelled from hand to hand in separate streams, one consisting of long red necklaces passing clockwise, the other of large white armlets

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passing in the opposite direction, and both manufactured out of shell. According to immemorial usage these articles still complete a perpetual circuit from community to community, passing between individual partners, whose association is life-long. He who passes an armlet expects sooner or later to receive a necklace in exchange, for the ritual of the Kula embraces three rules. Of a community it may be said "once in the Kula always in the Kula"; of the objects in passage it is true that "Kula never rests"; amongst the partners who exchange it is held that "it is more honourable to pass forward than to receive." An eminent person within a Kula community is one who, having many partners resident in other villages, is the transmitter of numerous and individually important valuables. Within the total area communities, though divergent in belief, customs and sexual morality, rank as honourable in proportion to their acceptance of Kula standards. Around the Kula is collected so extensive a system of native barter that the whole area is plutocratic, but public esteem is accorded not to the hoarder but to the distributor of wealth and the magnanimous person is he who hastens to requite a favour with another that surpasses it in value. Thus the Anatolians founding a commercial enterprise on spontaneous motives of autonomy, generosity and partnership, built with a solidity which, like that of their monuments in stone, survived the ends that the structure was designed to serve.

4

This survey of the Melanesian evidence has so far led to the conclusion that after a resolute analysis of the situation and a comprehensive estimate of indigenous resources the Anatolians decided to accord to the Dravidians superior credit as skilled cultivators and to invite their observation of their own methods of instruction in masonry, canoe and habitation construction, commerce, weaving, pottery and the art of governance. This simplification of procedure, sus-

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pended vested interests, which was highly politic. It opened a career to talent, but offered to the Dravidians a preferential opportunity for establishing their ascendancy. The evidence from Santa Cruz, where they were probably assimilated, and from the central area of San Cristoval, where their methods were frictional, suggests that the Dravidians were not wholly equal to the occasion. This also is the inference to be drawn from the record of the southern section of the Melanesian arc. The Torres and Banks Islands, which form a northern division of the New Hebridean group, stand apart from the culture of the larger islands to their south. The Banks Islands in particular present a variety of exceptional features. The native adze is headed with shell and is supplemented with knives of obsidian and chert. In other respects these islands were singularly well furnished, for they received the pig, dog and fowl. Currency varies according to locality; the most usual form consists of shell money as in Florida. Elsewhere the lack of suitable shells is supplied by the use of small feathers taken from near the eye of fowls; these are dyed red and so resemble somewhat closely the feather currency of Santa Cruz. Several of the Banks Islands contain structures in stone that recall the stone culture of San Cristoval; two islands, Rowa and Mota, formerly produced textiles that as in Santa Cruz were woven on the loom. There is thus considerable evidence if not of Anatolian occupation at least of Anatolian influence. But the most significant features of the culture of the Banks Islands are rather Dravidian than Anatolian. Mota, though larger than Rowa, is a small island barely three and a half miles in diameter and mainly occupied by the crater of a volcano. The productive slopes of this mountain were converted into a centre of experimental agriculture that produced no less than eighty distinct varieties of yams and sixty separate kinds of bread fruit. It is hardly to be supposed that these numerous products of expert cultivation should have been collected and developed within the compass of so small an island unless its population formerly consisted of

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skilled gardeners. The Banks Islands lie at the point of divergence between the routes that lead from San Cristoval in the north to the Fijian Islands in the south-east and to the main New Hebridean group in the south. It is reasonable to suppose that the Anatolians anxious to secure the commissariat of both these regions should have settled Mota under Dravidian supervision.

This island is also highly characteristic of the social organization of the sub-group to which it belongs. It contains in addition to three exogamous classes with matrilineal descent, assumedly to be traced to three separate elements in the population which may be Papuan, Melanesian and Dravidian, two other organizations known as the Sukwe and Tamate. The Sukwe, or men's society, occupies in each village a club house or gamal, a conspicuous building furnished with stone walls and seats and open at each end so that whatever takes place there is exposed to the view of passers-by and is in no way hidden from women. The gamal is divided along its length by a central passage, which provides a division into two moieties, and along each side by transverse barriers, which separate it into a series of grades corresponding with the social stratification of the club. Each compartment contains a cooking-place for the exclusive use of the men of a single grade, and is in addition furnished with the head-dresses or other appropriate insignia of its occupants. The Sukwe had in Mota recently no less than eighteen grades of which two were further subdivided into two and three sections respectively, making, in all, a succession of twenty-one stages of promotion through which its members might pass. Entrance to the gamal was irrespective of age but involved a payment, which was renewed and increased on the occasion of each promotion in grade; simultaneous passage through several grades might be compounded by means of a consolidated payment. The pigs or shell money paid for these advances in status were regarded much as a westerner would regard capital investment, for all payments made were distributed amongst

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the members of the Sukwe in proportion to their rank. He who, by frequent investment, had obtained superiority of status was secured in the prospect of receiving a superior rate of interest in the form of preferential assignments from the payments made by other men on the occasion of their accession to a new grade. The constitution of the Sukwe was thus timocratic, a character that was enhanced by the self-complacent practice of distinguishing individual possessions at the feasts which accompanied promotions. It was, for instance, common then to kole or distinguish a family hut in favour of its women. This act excluded from entry to a hut that had been thus distinguished any female whose own hut had not been made kole.

There is some reason to suppose that the Tamate or ghost societies of the Banks Islands were established by Anatolians who were less than satisfied with the character of this reaction to their commercial precepts. Entry to the Tamate was regarded as a kind of ceremonial death. Its members descended upon the candidate and beat him. The women of his family celebrated his selection with a ritual of mourning. The novices were secluded in the bush for a period of 100 days during which they were fined under a regulation that required them to provide food for other members of the society. After this period, which the unprosperous did not always survive, the initiate was held to have been ceremonially reborn and was a privileged person, free to attain higher grades of the Sukwe for which other men were not eligible. He, together with his fellow initiates, would from time to time issue from their place of assembly in grotesque disguises to make attacks on property and to terrorize the uninitiated. The Tamate does not appear to have supplied any coherent body of instructions or beliefs. It exploited native superstitions and imposed sumptuary regulation. The bird-like character of many of its disguises and the ghostly attributes of its members are reminiscent of Anatolian organization in Arosi.

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To this regulation the Dravidians appear to have opposed their own antidotes of multiplication and travesty. The little island of Mota came to contain over seventy societies, which according to the completeness of their organization belonged to several categories. Each society adopted a badge, usually that of a distinct variety of croton plant, which was thereby made immune from the touch of any man who was not a member of its appropriate fraternity, and so became horticulturally copyright. The badge served also as a taboo against the destruction of property. In order to avoid any trespass it sufficed that a few men should unite in a small society and severally belong also to some other. The suspension by each man of the badges of both his societies before his garden or hut rendered them immune from the attack of all other initiates, for the second badge in each case rendered the property taboo to the members of the small group who alone could violate it. Procedure of such senile complication bears a certain analogy to caste distinctions. It contrasts both with the simplicity of Anatolian organization and with the spontaneous communism of the native Melanesians. If, as seems probable, it was an expression of Dravidian subtlety it suggests that the Anatolians may have been judicious in restricting Dravidian activity mainly to the commissariat, and content when the natural growth of more spontaneous societies relieved Dravidians from the responsibilities of colonial government.

It has been suggested that the superior equipment of the Banks Islanders, as also their extremely commercial outlook may be explained by the need of feeding colonies which the Anatolians had previously settled in the New Hebrides and Fiji. The latter group may have been reached either from the New Hebrides or from Santa Cruz via Ticopia, a small island, which is the centre of a significant association of two narcotics, the first betel, which was in popular use, the second kava, which was used only by men in a ceremonial ritual. The ingredients of betel, which was chewed, consist

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of the sliced nut of the areca palm, the leaf of the betel pepper and ash. This narcotic, which like tobacco is restorative in fatigue, is of Indian origin and is freely used in South China and Indonesia, whither it may have been transported by the Dravidians. Kava, which takes the place of betel in the main basin of the Pacific, is prepared by one of two methods from the root of another plant of the pepper family ; its effect is strongly sedative and, when it is freely used in a tropical climate, highly injurious. In the first method of its preparation, which obtains within that part of the Melanesian area where betel is available, the kava root is scraped ; where betel is unavailable eastwards owing to the absence of the areca palm, the kava root is chewed and used immoderately by all ranks of the native population. In both methods of preparation kava is mixed with water and drunk. In Peru kava is replaced by coca, a strong stimulant of energizing effect in an enervating climate. It is there prepared in much the same manner as betel. From Peru the coca shrub was transported to Java, India and Ceylon, and there acclimatized. There is thus evidence of the passage eastwards of the betel restorative, and of the passage westwards of the much stronger coca stimulant. If the exportation of the former be ascribed to the Dravidians, that of the latter may with equal reason be attributed to the Anatolians. Each of these peoples was concerned to enhance the output of labour. The limited and ceremonial use of scraped kava which formerly overlapped the eastern margin of betel consumption may have been an Anatolian luxury confined to the western race and by them made ritualistic. The immoderate use of chewed kava to the west may have been an undisciplined innovation in Polynesia after the withdrawal of the Anatolians had deprived the islanders of the supply of coca.

Anatolian prospectors reaching the Fiji group from the north-west or west would there discover in the two large islands of Vanua Levu and Viti Levu, which together form a western division of the group, features well suited to attract

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their attention ; the small islands that lie to the east towards the Tonga group had little to recommend them. Several of these features belong also to Vanua Lava, the largest of the Banks Islands, which very closely resembles Vanua Levu in name. Vanua Levu and Viti Levu were settled with the Melanesian population which still inhabits their highlands and offers by reason of its smaller stature, darker colouring and extreme length of head a strong contrast to the Polynesians of the coastal and eastern district. The equipment supplied to this colony included taro, yams and the dog, but apparently neither the fowl nor the pig. They became expert cultivators and employed irrigation, an art in which the inhabitants of Vanua Lava were also singularly expert. We may, perhaps, associate the textile superiority of Rowa and Mota in the Banks Islands with the ultimate penetration into the southern belt of Polynesia, with which the Micronesian groups of Tonga, Fiji and Samoa are all but continuous, of money in the form of mats and cloth. But the western division of the Fijian group became at least temporally a local terminus of Anatolian exploration and Dravidian settlement.

The Bismarck Archipelago and the Coral Sea became Anatolian waters by the acceptance of the Anatolian modification of Austronesian speech as their *lingua franca*. The progress of Anatolian exploration eastwards can be traced by the transportation of a Melanesian population, skilled in masonry, which served as a disciplinary exercise, both to New Zealand and along the Micronesian belt in the direction of Japan. The historical outcome of the latter was by far the more momentous. The point of its departure thither may perhaps have been Florida, for the trackway of megalithic stonecraft is locally accompanied by the belief that the spirits of men pass at death to a place named Bulotu, which it is within the phonetic equivalents of Austronesian language to suppose the same as Bugotu in Ysabel, the traditional home of Anatolian rites in Melanesia. From the Solomons the prospectors reached the Caroline Islands ; thence their

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lines of exploration diverged. One route led northward to the Ladrões, Bonin Island and Japan. The Japanese islands became a centre of expert carving in stone, which included images of birds, and of a cult in the ritual of which fowls were associated ; both these features reappear in Easter Island. From Japan the Anatolians procured in the bark of the paper mulberry a superior material for textiles. A second route from the Carolines led to the low coralline islands of the Marshall group, which, though of small economic value, became a centre of superior mat-making and navigation pursued through the use of charts made of sticks, which have also been discovered elsewhere in Polynesia. The Marshalls lay towards the northern Polynesian belt, where Hawaii had valuable pearl fisheries. Melanesians were probably there employed as divers, as cultivators who used irrigation, and as constructors of the important buildings of the temple of Uni. Thence possibly the Anatolians reached the Californian coast and established a centre of refitment in the Santa Barbara Islands. The evidence for Anatolian passage along the South Polynesian belt is from rather than towards America and accords with the courses of the Humbolt and South Equatorial currents. The elaborate pyramidical platforms discovered in the Society Islands, Tahiti and Raiatea have American affinities. Although Tahiti received the Indonesian yam, the Indian pig and the West Asiatic taro, the first and third of these were supplies which might well have completed a round journey from the north. The kumara or sweet potato and paper mulberry which Tahiti also received were indigenous respectively to South America and Japan. The Samoan Islands which were similarly provided also certainly received the pig from the east ; they also passed westwards superior forms of canoe to Tonga and the eastern coasts of Fiji. Of the stone monuments of the Samoa and Tonga groups the most conspicuous is a trilithon in Tonga Island which is without Melanesian affinity ; for the similar constructions

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at Gaua, in Santa Maria, one of the Banks Islands, appear to have been derived from Polynesian models and are of very recent construction.

The appearance at various points in the circuit from Hawaii to Samoa of an individual type that greatly exceeds normal in the shortness, roundness and height of cranium is inexplicable as an accident arising from the fusion of the several stocks that are blended in the Polynesian race. Neither the Melanesians nor the two other western stocks that on cultural evidence must be supposed to be therein represented had these primitive characters in equal degree. They must, therefore, be interpreted as the survival or as the throwback of a strain that was certainly ancient and probably unpopulous. These types have been described as Armenoid, that is to say, of the race which has been here termed Anatolian.

But more explicit evidence for Anatolian identification is contained in the traces of a cultural development for which it is necessary to return to the Arosi district of San Cristoval. It has already been noted that the evolution of classes in Arosi displays features that suggest successive intrusions of Occidental ideas. The arrival of the kingfisher class in the time of a flood that depopulated the island, the employment of masonry as a form of disciplinary training, the expansion of the kingfisher class by the addition of a hawk sub-class, the establishment of chamber burial together with a myth of resurrection and a cult of ancestor or ghost worship, are indications of a gradual modification if not in belief at least in policy. There had, perhaps, arisen the danger that the master classes would be absorbed by their polygynous marriages, which gradually rendered their descendants racially homogeneous with the class of workmen. As the reports of prospectors increased in number and promise, the news would filter westwards attracting new groups of merchants eager to invest their capital of experience and ingenuity in an already prosperous enterprise. We may assume a chain of communication that as the products of

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the pearl fisheries travelled westwards became increasingly important and seductive. Nor is it improbable that when the traders became aware that they would be little in need of Melanesian labour in the lands that lay beyond the Micronesian arc, their attitude towards native labour would change. The occasion for a complete reversion of policy may have been afforded by the arrival of further Anatolians from Egypt.

This change was spectacular and took the form of the creation of a class of chiefs invested with a procedure which, if not deliberately calculated to shock Melanesian susceptibilities, could at least be trusted to trace a permanent line of cultural demarcation between masters and men. To the new class, which was termed Aراها, were drafted all children of Anatolian fathers or mothers together, probably, with such native boys as the chiefs selected for adoption. As a result the dual class of kingfisher and hawk emblems and the non-totemic or ghost class became native. Aراها boys were admitted to full class membership at a public initiation which followed a secret novitiate that had lasted for two years. Throughout this period the novices remained in the seclusion of a separate yard, which they must leave only under escort either at night or otherwise concealed from public view. They must on no account be seen by women until finally, when the harvest was about to be dug, they were brought forth ceremonially at the rising of the sun to appear before the assembled people. They were thenceforward in native phrase "great men" distinguished from members of other classes who were "people of no importance."

The Anatolians had imposed upon their subjects severe restrictions in the relations permitted between brothers and sisters; they claimed that the Aراها were descended from the incestuous union of a brother with his own sister. All the native classes in Arosi were exogamous; the Aراها were free to marry within their own clan. With exception of the ghost class all the native classes were totemic; the Aراها

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worshipped not totems but gods, especially the winged snake and the hawk, both of which were definitely connected with the sky. Native corpses were interred in a sitting posture; the dead of the Araha were embalmed and deposited in stone-lined vaults under pyramidal mounds, their souls were held to depart to an Island of the Blest, where they were cleansed in an immortal stream and so became divine; their ghostly shadows remained on earth as tenants of statues, stones, or animals. Tatooing was in native usage confined to women and effected by the method of punching; in the Araha clan men were tatooed by incision with certain privileged symbols consisting of the sun, the frigate bird and a web-spinning variety of the tarantula. These revolutionary changes may have served as a manifesto that the masters had now completed their own part in the reorganization of Melanesia. They were conscious of the desirability of making an impressive departure, for they were desirous of leaving behind them with those of their number who were entrusted with the care of communications, a legend adequate to sustain the working of their system.

CHAPTER IX

POLYNESIAN ADVENTURE

I

THE penultimate stage of immigration which brought to the Pacific coast of America men of Mongolian differentiation has been assigned to a date preceding 8,000 B.C. Various features in the culture of the Mongolian invaders which have Indo-Chinese, Indonesian or Australasian affinities have been accepted as evidence that these immigrants are to be traced to a homeland in South-east Asia, whither they may have come from the Tibetan plateau, dispersing along the valleys of the Irawadi, Mekong and Sikiang rivers the primitive negrito stock that had become established in Yunnan. Pursuing these routes the Mongolians would also come into contact with agricultural Dravidians, who in Burma and in southern China were associated with an antecedent population, to which both Papuans and Australoids had been contributory.

As population increased Indo-China became a centre of dispersion. Large numbers of Dravidians were added to the insular population of the Malay Archipelago; Mongolians passing northward first in groups, later in hordes, traversed China to Siberia and crossed the Korean Strait into southern Japan. These territories had long been the meeting-place of northern stocks. In the late Pleistocene the western Innuits, retreating southwards before the advancing ice-foot, had acquired forest dexterities from the Pamiri stock, who under the constraint of frigid conditions had developed the pit-dwelling habit and employed under the

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ground ovens for the cooking of food. As less rigorous conditions followed, the Innuït withdrew northward and their migrations into America were followed during the optimum climate by successive waves of Mongoloid hunters from the northern section of the central Asiatic plateau. From these peoples the Pamiri may have acquired a rudimentary technique in the fracture of stone. At least two thousand years before the coming of the southern Mongolians the Ainu fishermen had arrived in northern Siberia from Caucasia bringing with them the dog. As the Ainu advanced into Japan certain Pamiri groups, whose pit-dwellings have been discovered in the southern islands, availed themselves of a land passage which, leading southwards along the Micronesian chain, had already been traversed throughout its length to New Zealand by a non-domesticated variety of dog. These Pamiri groups thus enter the history of the main basin of the Pacific about 12,000 B.C. as the first Polynesians.

It is not to be assumed that Mongolians by long habituation versed in the art of peaceful penetration, and recently arrived from contact with the composite population of Indo-China, would be slow to establish communication with the indigenous peoples of the Siberian region. Their early groups, passing forward to cross the Bering Sea and to travel south along the American coast beyond the mouth of the Columbia River, profited least by the opportunity of participating in a composite culture, that became established around the protected seas of Japan and Okhotsk, waters admirably suited to serve as nurseries for navigation. Meanwhile the coastal submergence, which originating from the north had destroyed the Alaskan landbridge and was carving in bolder outline the fjord system of the British Columbian coast, had attacked the Micronesian chain, and rendered it discontinuous. The Pamiri migrations into the Pacific basin were in consequence arrested and Pamiri entered into close association with Mongolians both along the sea-board and in the interior. This contact grew intimate, but was

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not upon the coast, where the Mongolian element preponderated, greatly productive of intermarriage. When, therefore, North-east Asia became through the increase of population an independent centre of dispersion, migrations effected in large dugout canoes carried Pamiri with a minor infusion of Mongolian elements into the Pacific basin.

The earliest evidence that we possess of the manner of life of the first Polynesians derives from the extreme south of the Micronesian chain, and particularly from the three southern provinces of South Island, New Zealand. There is in this terminal area an obvious attenuation of culture due to a long period of travel over the coralline land surface of the tropical ocean. In a country which was relatively boundless and magnificently timbered the aborigines had remained chiefly subsistent on the shell-fish that had supplied their necessities during their passage to the south. These they supplemented by hunting the wild dog, a powerful and singularly broad-headed variety, and the moa, an extinct forest-dwelling bird allied to the Tasmanian apteryx, which it resembled in consorting together in pairs but greatly exceeded in size, attaining in some species to the height of 12 feet. To these supplies it is to be assumed that the first Polynesians added various other products of the forest such as fern root, raupo root, cabbage-tree root and shoots, fern-tree frond and pith, wild fruits, lizards and the larvæ of beetles.

The evidence for this settlement has been furnished mainly by ancient shell mounds, which are found in great abundance on the coasts of Westland, Canterbury and Otago, and also in the same provinces far inland. It is clear that the great labour of transporting shell-fish into the interior would not have been undertaken by a people to whom this form of diet had not become habitual. Some of the inland shell mounds, which attain to the magnitude of hills and are covered with humus to a sufficient depth to support mature forest, must be of great antiquity. A coastal mound subjected to stratigraphical examination at

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Shag Point, Otago, contained three separate occupation levels, separated by two intervening belts of sand. The lowest level held amongst the shell refuse, a piece of green stone, which may, perhaps, signify the survival of a certain measure of neolithic efficiency. But the men of the lowest occupation level at Shag Point made a more abundant use of palæolithic implements of fractured flint and this equipment of the hunter consorts well with the large number of dog and moa bones which are the remaining feature of the first bed. The second level indicates a serious decline in the produce of hunting. Fractured flints occur, but the bones of the dog are absent and those of the moa have been broken for the extraction of their marrow. With the first or second level of this sequence may be associated in date sunk cooking-ovens discovered at the depth of 14 feet below the level of the wind-swept plateau of Manuhirika, Otago. There can be little doubt that both this hearth and also dwelling-pits, which had been excavated in clay or earth in the northern province of Marlborough, are of tundra origin.

The Anatolian remains in New Zealand belong to the period in which Egyptian influence had in San Cristoval become sufficiently strong to secure the establishment of an official religion, but before the Anatolians had desisted from the plan of colonizing Polynesia with Melanesian labour. Their monuments epitomize, though in less developed form, the main features that belong to the arc of megalithic activity that extended from the Caroline Islands to Peru; they appear to have brought with them taro, the edible dog and the stone adze, but not the pig or fowl, and to have transported Melanesian workmen probably for the exploitation of obsidian and greenstone. Their settlements were mainly coastal and so chosen as to avoid the winds that render the western coasts a dangerous lee-shore. The Bay of Islands, on the east of the most northerly province of Auckland, contains a cromlech, which has been described as a miniature Stonehenge. Pelorus Sound, Marlborough, which possesses a warm northerly aspect, was made a centre

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of cliff excavations. The faces of rocks were terraced with broad ledges or platforms which may have been used as irrigated gardens. These terraces were further hewn out to the depth of from four to eight feet so as to form chambers, which are sufficiently analogous to pit-dwellings to suggest the transition from imported to native labour. From the north of Cook Strait the Anatolians penetrated inland between the western and eastern highland and established to the north of Lake Taupo a terminal cult centre consisting of an alignment of fifty great menhirs. There are also indications of an economic revival in South Island, the greenstone area. Cust on the coast of the province of Canterbury became the site of a great stone village that extended over three miles in length. The third level at Shag Point, Otago, contains implements that are more nearly neolithic than those of the two preceding deposits. It also provides evidence of an improved and systematized commissariat. A chert adze-head together with its sandstone rasp has been taken from below fourteen feet of soil at Bruce Bay, Westland.

Tradition states that North Island was first fished up, that is to say, sighted as its cliffs rose above the horizon, by the maritime demi-god Maui, who settled Pelorus Sound with Nui, a people described as small and dark. These men are said to have excavated the terraces; having intermarried with natives they took to dwelling underground. From these mixed marriages derived the ancestors of the Moriori, who in the twelfth century A.D. migrated to the Chatham Islands, about 500 miles to the east of Cook Strait. The primitive character of Moriori culture may be in part due to unprosperous surroundings, but it also suggests that even at the date of their departure the natives of this district of South Island had made small progress beyond the culture indicated in the Shag Point settlements. The Moriori surpass all other Polynesians in the length of their genealogies which go back for 182 generations, or, on the computation of twenty-five years to a generation, for 4,500

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years, that is to say, approximately to 2,600 B.C. The nearest approach to these prodigious records is supplied from Hawaii, where genealogies include 145 generations, or on the same method of computation 3,625 years to approximately 1,725 B.C. The correspondence of these dates with the times when Anatolian trade may be supposed to have entered and disappeared from the Pacific is sufficiently close to merit consideration. The Anatolians may be credited with the desire to create impressions of time amongst those whom they employed. Their arrival in Pelorus Sound must have been memorable, for they came to the relief of a necessitous population bringing with them from Fiji the edible dog and taro ; it was, moreover, from the unions of Melanesians and aboriginals that the Moriori were traditionally supposed to have descended. On the other hand their departure from Hawaii, where the pearl fisheries and the service of the temple of Uni may have been arduous, perhaps stood in local tradition as the occasion on which the native population secured autonomy.

It is natural that immigrants from distant lands should, within their new surroundings, seize upon those peculiarities of circumstance that are best adapted to awaken in them memories of the places of their origin or recent sojourn. Thus the volcanic character of North Island, New Zealand, would act as a superior stimulus to men arriving from Melanesia and we may scrutinize New Zealand culture, and especially such elements as the disposal of the dead, which are especially conservative, for traces of the local reconstruction of Melanesian beliefs and practices. Amongst many varieties of funerary disposal reported from New Zealand are the consigning of corpses to volcanoes, setting the body adrift in a canoe, cremation, burial at length in a chamber covered with a slab of wood and embalming. With the exception of volcano disposal all these are in correspondence with stages of the Anatolian history of San Cristoval. Cremation was a particularly frequent ritual in the Pelorus Sound district of Marlborough and was there

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associated with offerings of porpoise teeth, a form of currency apparently native to Florida. It was, moreover, believed that at death the spirits of great men departed to the north-west, along the ridge of mountains that belongs to the same system as the Melanesian arc, and there plunged into the sea, a belief which has a Melanesian counterpart. Elsewhere bodies were less ceremonially interred in a posture so restricted as to suggest that they had been bound. This method, which also is Melanesian, contrasts with the more usual practice of exposing the dead on platforms in trees, that belongs to North America, and may therefore be attributed to the first Polynesians.

To the period of Anatolian direction in New Zealand succeeds a long shadowy interval apparently punctuated by migrations, in which many peoples of South Island were destroyed or absorbed and the Melanesian element gradually obliterated. Later the Te Rapuari under a chief Rongo-atua, that is to say, spirit of the sea god, arrived in North Island bringing with them the South American kumara or sweet potato, and were on account of this new food hospitably received by the natives. Rongo-atua sent back for further supplies of this tuber. To a consequent agricultural development may be assigned many centuries of peaceful progress during which the native population of North Island abandoned the pit-dwelling habit and constructed for their own protection and that of their stores palisaded villages or paha that recall those of British Columbia and of the Mississippi delta.

In the eighth century A.D. the Waitaha landed on the north of Cook Strait and established themselves round Lake Taupo, where they doubtless became acquainted with the Anatolian alignment. This people is said to have covered the soil like ants. The increase of their population caused them to send out migrations into South Island, which drove the native population inland. The fugitives appear in native tradition with an evil reputation as ogres; they were reputed to live in caves and to hunt men with the assistance

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of a two-headed dog, the mythical survival perhaps of the powerful wild variety identified at Shag Point. It is clear that in warfare with the indigenous population the Waitaha considered it prudent to place themselves in a position not only of attack but of defence. They occupied, and according to tradition constructed, the stone buildings at Cust. Their activities offer a contrast with those of the agricultural Rapuari; they were a militant people under intelligent leaders who were open to suggestions from the ancient works, which they had discovered at Taupo and Cust. It seems that in the Waitaha we have early evidence of the intrusion of a new element into the Polynesian race. It is, indeed, probable that New Zealand sustained between the eighth and twelfth centuries a succession of invasions from Polynesia, which were far from pacific in character. To one of the last of these may be attributed the eviction of the ancestors of the Moriori from Pelorus Sound. These invasions may be provisionally explained as due to the increasing menace of hostile aggression from a stock that had become established in the New Hebrides and Fiji.

2

The invaders whose coming gave a final character to the composite Polynesian race, though of mixed descent and in external appearance very similar to Melanesians, had in temperament and ability preserved characters which had little resemblance to those of the races which had preceded them. The individual survival of a European type has been frequently remarked by travellers in Polynesia. The occasional combination of an aquiline nose with a speculative or introspective expression of the eyes has been attributed to a Semitic strain. The European type is most common in the Micronesian islands of Samoa and Tonga, and is characteristic of the population of the Mentawi Islands, which lie beyond the Pacific basin off the west coast of Sumatra.

The invaders appear to have made few material additions

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to the native equipment. They may, however, be credited with having in the Solomon Islands substituted the club and spear for the defensive Dravidian bow, and with having entered Polynesia in a new type of sailing ship, which was the result of a free and ingenious combination of various native models. Its constituents appear to have been the Dravidian outrigger, the Floridan plank-built canoe and the Santa Cruz canoe with double platform. Both these innovations were characteristic of a people that was in temperament self-reliant and forcible, in mentality observant and practical and by habit maritime. The double canoe, however, was something more than a vehicle of migration. It was the comprehensive expression of a character that was destined to survive the modifications, which altered surroundings and fusion with other races had induced on social structure and on racial type. For this character the invaders had the term "mana," denoting thereby a spiritual and sacred quality which displayed itself in men of eminent parts or achievement. A man might acquire mana either by descent or by his own exertion, but it was individual to himself and belonged to his own head. In operation mana might have many different manifestations. It comprised the abilities to isolate the particulars of circumstance, to visualize and register their properties and above all their susceptibility to modification, to recombine them securely and swiftly in the service of a clearly envisaged end. Mana might be displayed in draughtmanship or carving, in poetry or the memorizing of genealogies and traditions, in incantations and wizardry, in navigation, counsel or battle. It was above all efficient, whether for defence or offence, and gave a man personality amongst his fellows. Such a belief could not fail to make the invaders formidable antagonists; their impetuosity rendered them irresistible.

These westerners were impelled towards conquest without any abatement of reverence for the land of their origin. Capable of strong domestic affection, and in their social relations naturally communistic, they were relentless and

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devastating enemies, who in warfare travelled free of all encumbrances and in conquest assumed the prerogatives of an aristocracy over the peoples whose territory they had appropriated. These qualities and habits had amongst European peoples their counterpart only in the Nordic race, to whose contemporary history in Scandinavia that of the invaders of the Pacific offers an interesting analogy. Further means for the identification of the invaders are provided by the linguistic changes which they imposed on the Austro-nesian language that the Anatolians had made the *lingua franca* of the Pacific basin. It has been observed that Polynesian speech represents the clash between two inflected languages, whereby features that the two peoples employing them were unable to compose, or the dominant race to learn, became lost and that the Danish and Norman invasions thus simplified Anglo-Saxon, previously the most highly inflected of North European tongues. In Polynesian the number of individual sounds was at this time actually reduced to fifteen largely through the loss of consonants, of which but a single guttural, a single dental and a single labial survived. That the original language of the invaders had been of the Aryan family may be assumed from the similar resolution of all Polynesian and Aryan words into roots consisting of one or two consonants and a vowel, and the fact that of the words which in the New Zealand or Maori variety of Polynesian begin with "k" or "m" one half have phonetic equivalents in Sanskrit. In Polynesian "area" is an open space, "ruma" is an apartment or room, "poaka" (Latin *porcus*) is a pig, "hoanga" (Scotch hone) is a whetstone, "arcoi" (Arya) is a lord, "Whiro" (Latin *vir*) a god of war.

The date and route of this Aryan invasion of Polynesia may be inferred partly from collateral evidence and partly from oral traditions, of which the most important is a genealogy from Raratonga, one of the Cook group of islands. Between about 1,700 and 450 B.C. the Nordics, who had reached Punjab from Persia, inhabited the valley of the

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Indus and were there in contact first with Anatolians and Dravidians, subsequently with Dravidians and maritime Semites. This homeland is described in the genealogy as Great Atia covered with rice. In Atia stood the "Place of many Enclosures" or "Place of Spirits," a great building which rose to the height of 72 feet and was surrounded by a wall of stone. Here the spirits of the ancients after death foregathered with the gods, and chiefs and great priests met to elect kings and to consult for the governance of men, children and slaves. Thence the Nordics spread both southwards by sea along the Malabar coast and eastwards by land down the valley of the Ganges. These two directions of expansion created a diversity of experience. To the former, which supplied a succession to the maritime adventures of the Anatolians and to their depots in Ceylon and at the mouths of the Ganges and Brahmaputra, is to be ascribed most of the heroic period of the invasion. To the latter, which gradually dispossessed the Dravidians of their cultivated rice lands, is to be attributed the land hunger which found fullest satisfaction in Samoa, Tonga and New Zealand. About the middle of the fifth century B.C. these two bodies of emigrants met at the mouths of the Ganges and Brahmaputra and thence proceeded by sea to Sumatra. This island may have taken selective toll of the individuals whose temperament inclined them to quiescent settlement; such men would probably intermarry with the native population. When about A.D. 200 Sumatra was invaded by Mongolians this mixed population was submerged in the Malayan race; but the Mentawi escaped assimilation. Other fugitives may have retraced the sea route to the south of the Deccan to arrive in Madagascar with an Aryan modification of Austronesian speech. But the main tide of the Nordic invasion had long previously passed on to Java, which was well suited to serve as a base for maritime exploration.

Early Nordic history in Europe displays alternations of quiescence in a homeland and of violent excursions in

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periods of economic necessity, prefaced by the exploits of individual adventurers, such as those who furnished the Hungarian plain with bronze and iron swords. The route followed from Java has been traced by way of Ceram and Gilolo, in the Moluccas, to the northern coast of New Guinea; it is improbable that they would fail to visit Celebes and Borneo to the west. These men had mana, beyond the confines of agriculture they would encounter races of non-Dravidian character, Papuan, Negrito and Melanesian, and the contacts would be hostile. Head-hunting was a derisive sport; cannibalism might ensue amongst Nordics as the means of appropriating the spirits of their foes, amongst natives as a debased reflection of the same ritual. It is from this period that we may date the distinction between the retention of the heads of ancestors and enemies. The former was possibly a very ancient practice for it appears in the Nordic skull circles at Ofnet in Bavaria; the latter was purely contemptuous. The adventurers also passed along the north coast of New Guinea to reach the Dravidian settlement in the Trobriand Islands. Here the contact would be pacific. Adventurers attaching themselves to Dravidian chiefs instructed them in the theory of mana, so that their superiority to ordinary individuals became celebrated by means of a ceremonial etiquette similar to that which afterwards surrounded chiefs in the South Polynesian belt; such sacred personages must be approached by their subjects in an attitude of great humility. Undebased head-worship was added to the harvest ritual of Santa Cruz. The maritime adventurers passed on to reach Fiji, Tonga and Samoa, where they first encountered the indigenous Polynesian population; their descendants have there remained more consistently European in type than in any other islands of Polynesia. The aborigines did much to temper the violence of their invaders. Tonga and Samoa became the centre of a superior population, of which the racial substructure was neither Melanesian nor Dravidian but Pamiri, and where the cultural influence

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of the Anatolians was still potent, for the intruders in these most eastern territories of the Micronesian arc had acquired a superior efficiency in the construction of canoes. Tongans and Samoans had subsequent cause to regard all strangers with suspicion, and, although themselves of amiable disposition, treated castaways mercilessly as foreign devils. Savai, in Samoa, bears like Java the distinguishing place-name of a Nordic homeland.

Gradually a full tide of invasion developed in the wake of the adventurers. A population greatly modified by cross-marriage with indigenous peoples passed across the Bismarck Archipelago through Laughlan Island to the Solomons. These men were less adventurers than the overflow of a congested population that was in search of new territory. They trusted to themselves to find and take wives wherever they landed ; their pathway was strewn with violence and desolation. The domestic arts of weaving and pottery established by the Anatolians disappeared. A numerous breed of half-castes added to the terror of the population. Head-hunting became as prevalent as amongst the Dyacks of Borneo. Important buildings required the sacrifice of slaves to celebrate their foundations ; canoe houses were adorned with the skulls of those who in life had manifested mana ; cannibalism became rife and extended to San Cristoval.

The more distinctively Dravidian colonies of the Banks Islands acted as a buffer to neo-Melanesian ferocity ; in the Southern Melanesian arc cannibalism was practised only with reluctance and in derision of fallen enemies or as a means of destroying the power of their revengeful spirits. The population of Fiji was, however, Melanesian, and the tide of migration paused there to repeat the neo-Melanesian corruption that had arisen in the Solomon Islands.

The Raratongan genealogies give A.D. 450 as a date when their ancestors reached Fiji, and A.D. 600 for the occupation of Tonga and Samoa. There followed for the adventurers a heroic period of navigation, which gave rise to numerous

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supplementary myths relating to the deeds of Maui and of other maritime demigods. The ancestors had re-entered on the Anatolian inheritance, which they had enjoyed from the mouth of the Indus, through Ceylon to the mouth of the Ganges, thence to Sumatra, Java and Ceram. They were now again amongst men who were without trace of negroid specialization and profited by the prestige that had in the past attached to the merchant princes. Thus there was in this period a great preference for European traits of feature and complexion, and the character of the stock may have been reformed by matrimonial preference for blonde wives. Maui is credited with having visited the Tonga, Cook, Society, Paumotu and Marquesas groups, New Zealand and Hawaii. In the last group one island bears the name of Ui or tatooing-comb, which suggests that the maritime adventurers had adopted the distinctively Anatolian practice of tatooing males as a mark of aristocratic lineage. This art was in New Zealand esteemed also a means of making warriors more terrible in war.

The Raratongan genealogy gives at about A.D. 650 the name of Ui-te-rangiora, a chief or Ariki, who in his canoe, which was fabled to have been built out of the bones of his enemies, journeyed so far to the south beyond Rapa, Austral Islands, that he encountered Antarctic ice and there saw many wonderful things. Two and a half centuries later the Ariki Te-Arutanga-naku, emulating this example, made a similar expedition. Tradition is silent about other Nordic adventurers who may have lost their lives in exploration.

To this period, before A.D. 900, belongs an ill-omened renewal of Polynesian contact with the New Hebrides. The islands of the Coral Sea received the legend of Maui's exploits in fishing up new lands; the cooking-places of gamals or club houses for men were supplied with excavated ovens, members of secret societies armed themselves with staves headed with grotesque faces like those that served as emblems of the Nordic gods Tane, Rongo and Tangaroa. The Tamate or ghost societies of the Banks Islands applied

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to these importations their characteristic weapons of derision and multiplication, though in a temper highly suggestive of fear. A member of a Tamate in using his stave to belabour the uninitiated was careful to guard against the carved head being seen. Vanua Lava had in the legend of Quat a parody of the Maui saga in which Tangaroa was debased into Tangaro, the first name of eleven younger brothers of Quat, so that the total numbers of these Dravidian demigods equalled that of Siko's companions who came to Florida from Bugotu in Ysabel. Of the eleven Tangaros one was Tangaro the Fool; all had assigned to them as second names the term descriptive of the leaf of some distinctive tree, shrub or plant.

From this eastern contact arose a great wave of neo-Melanesian migration from Fiji, which resettled Polynesia with a population that had vestiges of negroid specialization. The discovery of Hawaii by the adventurers may be dated to 650 B.C., that of the Marquesas group to 675. In the latter group while Hiwa, Hiau, Hiwaoa are local variants for the generic expression for homeland, the application of realistic subjects to the tattooing of women is a neo-Melanesian art that attained excellence in a society, from which the traditions of Anatolian regulation and Nordic initiative had been almost effaced. The genealogies of Hawaii, Raratonga, New Zealand, and by implication also of Tahiti, include at about the middle of the seventh century A.D. the name of Whaitiri, a woman who has been assumed to have been a Melanesian and was according to tradition the first Polynesian cannibal. Whaitiri dwelt in Fiji and there married Kai-tangata, who, as his name signifies, also became a cannibal. These two had a son Henna who died in Tahiti. Henna was the father of two sons Karii the elder and Tawhaki. Karii disobeyed his mother in a matter affecting her head, in consequence superior mana descended on Tawhaki, the Baldur of New Zealand mythology. Thereupon Karii in jealousy slew his father Henna as a sacrifice to the gods. He further slew

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Tawhaki, who was brought to life again by the karakia or incantations of his sisters. Tawhaki is ancestral in most genealogies from New Zealand and has the Tahitian date of A.D. 700, Karii is ancestral in the Raratongan genealogies. It was under these conditions of fierce neo-Melanesian disturbance in Southern Polynesia that the Waitaha, who were possibly Polynesians under Nordic leadership, appear to have departed for New Zealand. It may be supposed that the Fijian migration was little to the taste of the adventurous men of relatively fair complexion whose exploits as navigators are celebrated in the Maui sagas.

Tahiti, the most important island of the Society group, so named by Cook who visited them in 1767 to make for the Royal Society of London observations on the transit of Venus across the sun, has been described as the "gem of the Pacific." Its food supply represented by the breadfruit tree, banana and coconut was abundant, of these staples the banana alone required cultivation. As to the bread-fruit tree Cook observes: "It is never planted but springs from the roots of the old ones, which spread themselves near the surface of the ground. Hence we may observe that the inhabitants of 'Otaheite,' instead of being under a necessity of planting their bread, will rather be obliged to prevent its progress, which is perhaps sometimes done." The Tahitians also possessed the pig, poultry, turtle and man as variant forms of diet. They had kava for drink, and the paper mulberry supplied them with the fibre from which they wove native cloth. Unlike the Tongans, the Samoans and the Hawaiians, the Tahitians had become languorous and inclined to obesity. They normally breakfasted twice at eight and eleven o'clock, dined twice at two and five, supped at eight, after which they retired to bed; they awoke for a second supper at two o'clock in the morning. This routine they would, however, from time to time modify by a practice calculated to bleach their skins, which bore resemblance to the sweat bath of the Athapascan medicine men, or shamans. On these occasions they would wrap them-

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selves up in great amounts of clothing and remain indoors confining their diet to bread fruit. They treated their women harshly and were addicted to infanticide. In government they had by the close of the eighteenth century evolved an extremely aristocratic institution; the king of Tahiti was an hereditary monarch, whose life, though prosperous since he could claim all the property of his subjects, was yet surrounded by innumerable and irksome taboos. It was his practice to resign office, when a first son was born to him; he thus secured his power as regent but evaded certain of the restrictions on his freedom. To the chief and the sacred nobility belonged the sole right to eat man, pig and turtle. After death the nobility alone reached paradise, but commoners who made large donations to the priests might also ascend thither from the lower regions of Po, to which they must naturally pass at death. The *tohungas* or priests were noted for their feats of memory in enumerating genealogies, which they supported by the practice of adding on the occasion of each succession to the chieftainship a new length to the sacred *maro*, a garment of Dravidian origin woven out of bark-cloth covered with red feathers which belonged to the royal insignia.

The *Tamate* of the Banks Islands were in Tahiti represented by the *Areoi*, a secret society of which the members were nominally devotees of Oro, the god of war. Actually the *Areoi* was a celibate society of aristocrats, who had adopted infanticide as a definite feature in an orgiastic and terrorist cult and claimed that they could attain immortality by pursuing in life the unbridled licence, which they anticipated to be their portion after death. They supported the fiction that an *Areoi* never grew old by secretly burying alive those of their companions whose virility had departed. They recruited their numbers throughout the neighbouring islands, which they periodically visited exacting presents, violating women, slaying any children born of this intercourse and giving dramatic representations, of which the themes were criminal or indecent. Wherever they went they were

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received with fear and respect as sacred persons. Cook witnessed the departure from Tahiti of sixty canoes forming one of the Arcoi expeditions.

The Tahitians had not wholly relinquished the warlike and maritime practices of their forbears, for they were constantly engaged in civil warfare and fought frequent battles on the sea. In neither form of engagement was quarter given to the vanquished party. All ceremonial contacts between their tribes were occasions for human sacrifices, for which the victims were often secretly assassinated. The evidence both of modern observers and of the genealogies indicates that the Society Islands, despite their abundant vegetation, had become over-populated, that tribes constantly raided the food supplies of their neighbours, and that would-be immigrants met with an extremely hostile reception. On the other hand the common people were mild and generous in their ordinary demeanour. They wore their hair short, and anointed it frequently with scented coconut oil; the women decked their heads with flowers and with rosettes of coconut shoots; both men and women were elaborately tattooed on the chest and limbs but not commonly on the face; mothers were careful to flatten the heads and broaden the nostrils of their children during infancy. The Tahitians were much given to surf-riding, feasting, dancing, music, oratory, cock-fighting, football, wrestling and boxing. Of the last two Cook noted that wrestling was more popular than boxing, which was regarded as a dangerous sport, and that wrestling itself, which was also practised by women and even between antagonists of opposite sex, lacked the vigour which characterized it amongst the Tongas of the Friendly Islands.

A diagnosis of this neo-Melanesian corruption of Nordic and Polynesian society might start by recognizing that climatic enervation and restriction of territory were conditions hostile to cultural hygiene and that infanticide, depression of the status of women, sexual licence, effeminacy, gluttony, cannibalism, the kava drug habit, restriction of the initiative of chiefs, social and religious prerogatives

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dependent on birth, simony in priests, were symptoms less of degeneracy than of disease. Of these infanticide, cannibalism and the kava habit were possibly the most serious. It has been observed that a people of arrested culture may retain many of the essentials of social health by reason of the circulation of experience due to the passage of successive generations of individuals from the cradle to the grave. Infanticide in Tahiti cut at the roots of this youth movement. Cannibalism in Melanesia existed not as a sacrament belonging to funeral obsequies, but as a distasteful expression of animosity to a defunct enemy. In Polynesia it was destitute of ceremonial significance and existed for the satiation of the imperative demands of an acquired taste. The diagnosis would pass on to note that Anatolian institutions were mainly represented by antiquated survivals, such as the dual conception of paradise and the underworld, and by the diversion of ritual and commerce in the Dravidian direction of caste distinctions ; that the head worship of the Nordics had been undermined by a system that while exalting the magical properties of chiefs deprived them of all discretion as rulers ; that the adventurers' esteem for fair complexions had been degraded into an affectation and their initiative parodied by an obscene travesty of exploration ; that the aborigines had been deprived of title to their holdings and though loyally at pains to induce Melanesian characters in their children, were the victims of outrage and murder.

The corruption of the best is not only morally the worst but physically and intellectually also the most painful. In the opposition of the Nordic and Pamiri elements those who suffered most were rather the persecutors than the persecuted ; for the common people were at least placid and spontaneous, while the Areoi, restless under unnatural inhibitions, actually submitted themselves to the torture of living burial as a means of supporting the empty pretensions of their cult. Nor is it unreasonable to suppose that the Areoi as agents of an artificial unrest served to forestall the decadence which threatened the serenity of Tahitian

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society. The renaissance of land hunger, love of domesticity and desire for children, which prompted men of Nordic temperament to undertake in the fourteenth century the resettlement of New Zealand, can reasonably be accounted for as the rebellion of adventurous spirits against a regime that had become spiritually intolerable.

3

New Zealand, the Ultima Thule of Polynesian migration, offers to the tropical islands of the South Polynesian belt bold contrasts of situation, relief, flora and fauna. These are exceeded in extent. North Island with an area of over 44,000 square miles is over four times as great as Hawaii, the Friendly Islands, Samoa, the Society Islands, the Marquesas and Paumotu put together. It is seventy times the size of the Society group. South Island is even greater by a third. Tradition states that the Maori came to New Zealand in the year 1350 in a historic fleet of six canoes. It is certain that these vessels did not arrive simultaneously; neither did they all come from Tahiti nor in the same year. Some were outriggers, others Maori double canoes. All had been amply provisioned and equipped with great sails and paddles. These vessels can have carried few women and fewer children. Amongst their crews each contained a chief or Ariki and a priest or tohunga, the latter entrusted with images of gods and ancestors and sacred things such as the kura or vitalizing stones. The Tainui, the most famous of the canoes, thus brought the Korotangi, a bird carved in stone which tradition said came first from the Meeting Place of Spirits. This image has close resemblance to an ancient bronze bird discovered in Japan, which was possibly of Anatolian workmanship.

The importance which in Maori legend invests the coming of these few hundred sea-worn adventurers to a land, which they were destined to conquer and hold in undisputed possession for five hundred years, is not diminished by

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historical considerations. The crews which in the fourteenth century disembarked in New Zealand were equally poor in material and rich in spiritual possessions. They had that which they had brought with them : their canoes, a small remaining stock of provisions of the voyage, the garments which they wore, the clubs that they carried, their sacred things. They were young, confident and volunteer companions of an arduous voyage under a self-chosen leader. They had made the great refusal of sensuous ease, when they had turned their canoes seaward from the embraces of their playmates and the persuasions of their relatives. Each canoe provided a level and co-operative class of adults expert in the efficiencies of manhood : war, navigation, fishing and debate, and in its relaxations : dancing, wrestling, swimming and song. Individuals possibly excelled in the fine arts such as oratory and tatooing ; the *tohunga* was skilled in genealogies, traditions and *karakia* or incantations. They had their code of acts imprudent in the individual, disastrous in the *Ariki* ; these were proscribed by taboo. It was, for instance, supposed that a *tohunga* who was guilty of an historical inaccuracy must so affront the ancestral gods that they would abandon him to the malignity of evil spirits. In accordance with *Areoi* convention each adventurer was a lord and sacred, and each *Ariki* was an exceedingly sacred person.

The evidences of indigenous prosperity were likely to arouse the cupidity of the invaders, who, on their part, would anticipate merciless treatment, if captured. But the needs of the Maori were insistent. To the spirit of adventure was added the spur of necessity. They lacked food, shelter, clothing, tackle and utensils. In their recent homeland society had supplied these generously from well-explored sources ; in the new land the sources were as yet uninvestigated and the society was yet to be made. The adventurers could entertain no doubt as to their procedure. Having appropriated such goods of the natives as they needed they must devise means for their safe keeping. They probably adopted their defences from the native model of palisaded

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villages. To these paks, as an opposition not wholly lacking in the tradition of Maori leadership awakened their military talent, they gradually added superior fortification.

It had been the practice of the celibate Areoi to supply themselves with temporary consorts. The Maori needed mates and proceeded to appropriate native girls as slaves. Hence arose tales about Patupaiarehe, or a race of blonde fairies, who were forest-dwellers and of gentle disposition and who taught the Maori the designs employed in tatoo and the art of making large nets, with a knot which has been identified with that of the lake villages of the European Alps. Other Patupaiarehe tales, however, speak of the fairies as issuing from the forest by night to smother men, and represent them as wholly lacking religion or magic and hating cooked food. These tales are, however, by no means beyond reconciliation. It may be assumed that the Maori first encountered in North Island the population of the eastern coast, which was mainly dependent for sustenance on fisheries, but had also kumara and taro in cultivation and a textile industry based on the phormium or native flax plant. These they evicted from their holdings, slaying the men and mating freely with the women. The fugitives, who took to the forest and practised fishing by night, were eventually exterminated. Indonesian superstition was sufficiently current amongst the first Maori of New Zealand to invest the fugitives with mysterious qualities. The Waitaha had regarded the aboriginals as ogres who dwelt in cliffs and hunted men with the double-headed spirit dog. The Maori of North Island came to suppose that the Patupaiarehe were small foresters, of nocturnal habit, who hated cooked food and smothered such men as they could surprise. The Melanesians of San Cristoval believed that the Kakamora were diminutive dwellers in cliffs and nocturnal in habit, that they tracked down men by scent and killed them by pressing down upon them with their long fingers. There can be little doubt that the two superstitions from New Zealand are separate versions of that from Melanesia.

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Having given up any idea of return to Polynesia the Maori abandoned the construction of plank-built ocean-going canoes and substituted plain dugouts, employing for this purpose the magnificent timber of the kauri pine, which was capable of furnishing a continuous keel of over eighty feet in length. The form of propulsion was the paddle supplemented in the great war canoes, which were furnished with plank gunwales, by a small sail useless for voyages of any considerable length. Having thus signalized their acceptance of new conditions of life they evolved appropriate forms of government, social organization and land tenure. Once acquired the Maori made various important arts, such as net-making and design communicated by the captured women, sacred to men. The most arduous of the tasks reserved for women was the service of the underground ovens of native tradition in which malodorous and often actually offensive food was cooked by steam. But the contribution of Patupaiarehe women, whose gentleness and loyalty appealed to the latent domesticity of their masters, was not confined to menial employment. The sons of these first captives became Maori and sacred, their daughters were married with Polynesian lack of formality to their fathers' companions.

From the affection inspired by their wives there grew up amongst the Maori a status for women much higher than that recognized in the tropical islands. Women were excluded from religion, took their meals apart and were heavily worked, but they shared when young the games and amusements of boys, and when grown had the right to reject an offer of marriage, shared the counsels of their husbands, fought by their side in war, and had equal rights of inheritance with men, exceptionally they even became chiefs and warlords. The daughter of an Ariki had a special function in ritual. If married to well-to-do husbands, wives were relieved of drudgery by slaves: in exceptional cases they appear to have been recognized as seers. It is not without interest that the camaraderie that thus reconstituted a relation, which was initially concupiscent and servile,

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derived not from sex but from the male free fellowship of the canoes.

With these altered values came a healthful reconstruction of experience. Knowledge, when seen constantly in relation to life, is likely to rectify standards of conduct. Of the evils of Tahitian existence most disappeared in the Maori renaissance. Yet in a land that possessed neither turtle nor pork, and where the sole variants from a dietary of vegetables and fish consisted of rats, small birds and the edible dog, the propensity to cannibalism instead of abating was actually stimulated. In the early days of incessant warfare, as the Maori hunted Patupaiarehe or strove together for the possession of superior beaches and sites for cultivation or for paha, an abundant supply of slain or captured enemies was seldom wanting for the altar or for the oven. This was esteemed food fit only for heroes. It is probable that the Patupaiarehe women found its preparation exceptionally repugnant.

The progress in the status of women was signalized by their inclusion in the order of descent in default of male issue. This promotion indicated the addition of a new servile class composed of slaves captured in war. For these although, subsequent to the extirpation of the Patupaiarehe, of Maori race, there was, as for women, no consolation of religion, but there was also no hope of enfranchisement and no security of life. A slave and the children of slaves were chattels; even if they escaped back to their own people it was etiquette that they should be returned to their masters. They performed menial services and generally relieved the free-born, whether man or woman, from labour. They were occasionally slain for sacrifice to the gods or for human food. On the other hand, inhumanity to slaves was rare. They shared the sleeping quarters of their masters. If their life was arduous and precarious, its chief bitterness arose from the fact that they belonged to a race to which any condition other than freedom was intolerable.

There existed amongst the freemen of the paha an atmosphere of loyal fellowship founded on self-respect and a respect

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for others. It was competent for any freeman to found a pah of his own. He thus became a noble, although he might not be of that status by birth. It was, moreover, competent for the chief of a great pah to assume the peculiar sanctity of an Ariki, even were he not of lineal descent from an Ariki of the canoes. Upon these personal promotions there were two main constraints, of which the first was individual and the second social. A man might either fear failure or the restrictions that pre-eminence must place upon his own freedom of action, or, on the other hand, he might be constrained by social solidarity. This in Maori life was cemented by social isolation. Each pah transacted its own affairs, maintained internal discipline without any apparatus of punishment and dealt autonomously with its neighbours. This orderliness was in part dependent upon the sanctions of tapu and muru, both of which were probably of Anatolian origin, and of utu, which may have been Nordic. Tapu, in Florida tampus or in generalized spelling taboo, entered with peculiar completeness into the scheme of Maori society. Its original meaning for the Maori was possibly consecrated or sacred to a god; it thence came to mean prohibited, to prohibit and a person who had performed a prohibited action. For such a person the Maori believed that punishment, and most frequently punishment by death, lay in wait through the activity of malignant spirits. There is abundant evidence that the mental reaction in the case of a man or woman discovered guilty, even though without intention, of a prohibited action was occasionally sufficient to cause death. Punishment was automatic, there was no need of external justice; sometimes the offender committed suicide. Tapu could be imposed either by the Ariki or by a tohunga. That which such men had made tapu became inviolable; if an individual desired to protect his crops or any possession from theft he employed a tohunga to render it tapu, by setting beside it the mark of sacredness, and it was thenceforward protected. Only a greater mana than that of the imposer could remove a tapu.

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Above all persons the Ariki was tapu ; his head exceedingly tapu. Should he touch it with his fingers he must sniff back the mana which had been imparted to them, in order that it might re-enter his head. When his hair was cut the village was tapu and must remain idle. Tapu was the final arbitrament of the Ariki, who could use it for religious, political or selfish motives. He could tapu a whole pah with all its contents. Should he do so, both pah and goods must be deserted for ever on pain of sudden death. Thus the Ariki was furnished with terrible and unexampled powers within a scope that was commensurate with all social activities and consequently with the whole range of the Maori virtues of justice, self-control and unselfish devotion to the communal interest.

Muru was a method of forcible distraint on private property by looting which acted with deterrent effect against the theft of things unprotected by tapu. A man, who had received a private injury that lacked communal significance, would resort to muru by making together with a party of companions a descent on the household or village of the culprit, where, unless bought off with gifts of considerable value, he would seize his personal property of blankets, ornaments and heirlooms and distribute these amongst his supporters.

The object of the aggressor was, however, probably less to recoup himself by material acquisition than to satisfy the desire for reparation or vengeance, which was ever recurrent in the Maori mind. Utu or revenge illustrates the impulsive character of the Nordic temperament. It was not essential that the man, who experienced the need for it, should secure compensation from a particular quarter provided that the retribution was felt to be appropriate in kind. Thus, when a great chief had suffered a heavy bereavement by death he might exact utu by the massacre of slaves. Murder was a terrible affront to relatives and demanded utu. When a man had been murdered, his companions sallied forth to exact utu from the first person encountered. There might

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be no delay of vengeance, nor did it matter to what tribe the unfortunate, who encountered the blood-seekers, belonged. An occasion is on record when a man met and slew his own brother, who was entirely innocent of the crime.

Maori theology included a cosmogony which may be assumed to have been of combined Anatolian and Nordic origin. The first condition of the Universe was Po or darkness; this æon was followed in succession by two others, Kore or the Void, and Ao-marama or the World of Light. Then appeared Io the prime source of all things, manifested in the stars. From Io descended two orders, one female through Marama the moon, the other male through Ra the sun. Of these orders the last successors were respectively Papa the female Earth, and Rangi the male Heavens. Po or darkness then became the underworld. From the marriage of Papa and Rangi were born the second order of gods, Rongo, of cultivated crops; Tane of man, forests and birds; Tangaroa of the ocean and fish. Tane received Nordic attributes. A war canoe was amongst his *aria* or visible signs, and was called by his name with the attribute Sea Rider. He fashioned woman out of earth, breathed into her life, and wedded her. To them were born Tiki the father of man, and two daughters, one the goddess of birds, "Tane's wing-flapping children," the other, who descended into Po, "the Great Woman of Night." These gods or *atua* were pre-eminent. But there were many other *atua*, and the Arikī appears to have been regarded as an *atua* on earth.

The traditions of the Maori contained a lesser order of beings, the demigods or heroes of whom Maui was the most remarkable. Maui was a great voyager and benefactor of mankind, but he was also of a mischievous and irreverent humour. His escapades have been compared with those of the Norse Loki. It was related that Maui on one occasion noosed the sun causing him to go more slowly, a legend suggestive of passage southwards towards the longer summer days of temperate latitudes. He also descended into the underworld of Po, whence he secured for men artificial fire,

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which he found burning in the fingers and toes of the sister of the Great Lady of Night. These he plucked all but one, and was then almost consumed in the conflagration which ensued, when the goddess in her wrath cast the seeds of the remaining flame into the kaikomako tree that thenceforward provided the soft underwood used by the Maori in kindling flame by friction. Maui failed when he sought to secure immortality for man.

The religion of the Maori was supplemented with a biological development of the primitive mana concept and with a belief in ghosts, which appears to have had Anatolian origin. According to the first of these all things had hau, an intangible substance capable of embodying mauri or vital principle and of being thus vitalized by the ritual use of the kura or sacred stones. On the other hand it was possible to destroy hau and then mauri would perish with it. The immortality of chiefs depended on the transference of their hau at death to paradise. According to the latter that which, in the case of all freemen, went to the leaping-off place of spirits and thence to Po was not mauri but wairua. The wairua or ghost was not confined in Po but might revisit the scenes of its earthly life. But the return of wairua to the pah was undesirable, their influence was bad. For this reason the tiki or figures of ancestors were carved with obtruding tongues in order that their derision should drive wairua from the palisade of the village and from its whare, or houses.

The tohunga doubtless found professional occupation in the exposition of dreams. He also practised makutu or wizardry. The original tohunga of the canoes had possessed in legend great efficacy as wizards, and their descendants no doubt derived reputation from the cultivation of an extraordinary susceptibility. It has been remarked that a modern water-finder, equipped with his external apparatus of witchhazel and with subconscious perception of the percolation of a subterranean stream, would not differ greatly either in method or in mentality from a tohunga acting in this capacity. Moreover, the ritual of sacrifice to

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the gods had equipped the tohunga with sufficient knowledge of the anatomy of the human subject to make him an expert manipulator in the setting of fractured bones, possibly also in the neolithic operation of trephining on the skull.

Such operations may have been in frequent request. Prior to British control there was for a pah rarely lacking a direction whither attack was impending or whence it might be expected. Thus the Maori, like the Dorian Spartans, lived in a constant preparation for warfare that reduced neither their conjugal fidelity nor their love of oratory nor their desire for individual adventure. They frequently made lengthy journeys by land or water and occasionally held great tribal or intertribal gatherings for discussion or simply for entertainment. At such times hospitality was provided on a lavish scale and the entertaining chief might devote months to preparation. Large allotments were taken into cultivation for the growing of kumara ; numberless baskets would be made to hold the provisions, each destined to contain a complete meal ; fishing would yield a supply of dried shark flesh many times exceeding the ordinary provision of the community ; the girls would zealously rehearse the dances with which guests were to be entertained. As the day of the festivities, which might be continued for weeks, arrived great walls of provisions were stacked and lofty platforms constructed for the display of comestibles. It is recorded that one such wall extended for over a mile and was no less than five feet high and as many broad. The scaffolding of the platforms might be fifty to sixty feet in height fringed with pendant dried shark and piled tier upon tier with baskets of food.

When the guests arrived they were greeted ceremoniously and took their seats on the central space within the ring of huts. There the food would be brought to them by women with many excuses for its inadequacy. Each Ariki would be provided with a separate basket and would withdraw to consume its contents alone, for his mana communicated tapu to all that he touched. When every one had fed there

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would be speeches ; the chiefs would take their seats on their tapu mats, wearing their ceremonial cloaks and equipped with the regalia of their rank ; bunches of the rare white tail feathers of the huia, a species of hoopoe, hanging on their shoulders, beautiful jade ornaments in imitation of the tooth of the tiger shark in one ear, the dried head of a huia pendant from the other ; their faces miracles of the tatooist's art. On their breasts would hang tiki, grotesque jewels wrought in jade in the semblance of a man with red cement eyes ; each would grasp his jade merai or club and his carved hani or walking-stick. When the speeches were over the women would give their entertainment, the poi posture dance, in which the dancers standing in rows, their heads decked with white feathers, would twirl balls of rush leaves over their heads, beating time to musical accompaniment, while the audience chanted some ancient song or karakia. Such was the great sea-passage song of the Aotea canoe, composed and recited first by its chief in ancient days to animate his crew as they made for the new land from their ancient home in Raiatea.

Then with a change of rhythm in the band of piping nose-flutes would follow the solo dances, an entertainment of more primitive appeal. First one and then another of the musicians would in turn lay aside her flute and perform, ecstatic and unashamed, the native dance, in which every muscle of her body would appear to leap, quiver and entice. Then on a sudden she would stand, hands on hips, a statue of defiant passion. Her turn was over, with eyes upon the ground she effaced herself again amongst the musicians, whilst another took her place. This entertainment completed, the men would betake themselves again to oratory until dark, after which guests and hosts retired to the smoky comfort of the sleeping-huts.

When a Maori was likely to die he was placed in a shed outside the pah, for a house in which a man had died became tapu and could not be used again. If the sick man was a chief, an influential tohunga would continue with him

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night and day, his relatives would assemble and mourn. He was sometimes moved from village to village in order that the supply of mourners should not fail. At death the mourning became extremely demonstrative. Women cut their faces, arms and thighs, rubbing in charcoal and thus rendering the disfigurement permanent. The body lay dressed in the best clothes of the deceased, his regalia tiki, merai, hani lay beside him. His courage and hospitality, the strength of his mauri were rehearsed ; he was bitterly reproached for leaving his people. He was likened to Tane overthrown, to a shattered canoe, to a singing bird. Leading men from assembled tribes pronounced a stately valediction : " Go, O Sire ! Go to the black pit of death. To Reinga, the leaping-off place of departed spirits ! Depart to the underworld, to the home of the Great Lady of Night, for that is the great abode of us all. Go to greet your ancestors, who have gone before you. Go ! " The coffin, shaped like a canoe, was hung up in a tree of the sacred woods, which thenceforward became exceedingly tapu, and was left to decay. Later the bones were cleansed and secretly buried by the tohunga. Those who handled the dead were tapu, and their release from restrictions which prohibited their touching food with their hands, was removed only when offerings of food had been made to the spirit of the dead by his eldest son and daughter. The tomb of a chief was a very tapu place shadowed by the half of a canoe and containing his regalia and his bones ; by it was placed a calabash of water and a basket of provisions. In the canoe the spirit of wairua was to depart to eternity, the provisions were for its sustenance upon its journey. Lesser men were deplored with less state, but with extreme manifestations of grief. For a woman who died there might be lamentation, but no religious ceremony ; there was the vague anticipation that her ghost would reach some after-world inferior in comfort even to that awaiting men. For a slave, since he was but a thing without soul or ghost, there was neither ceremony nor lamentation, only annihilation.

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